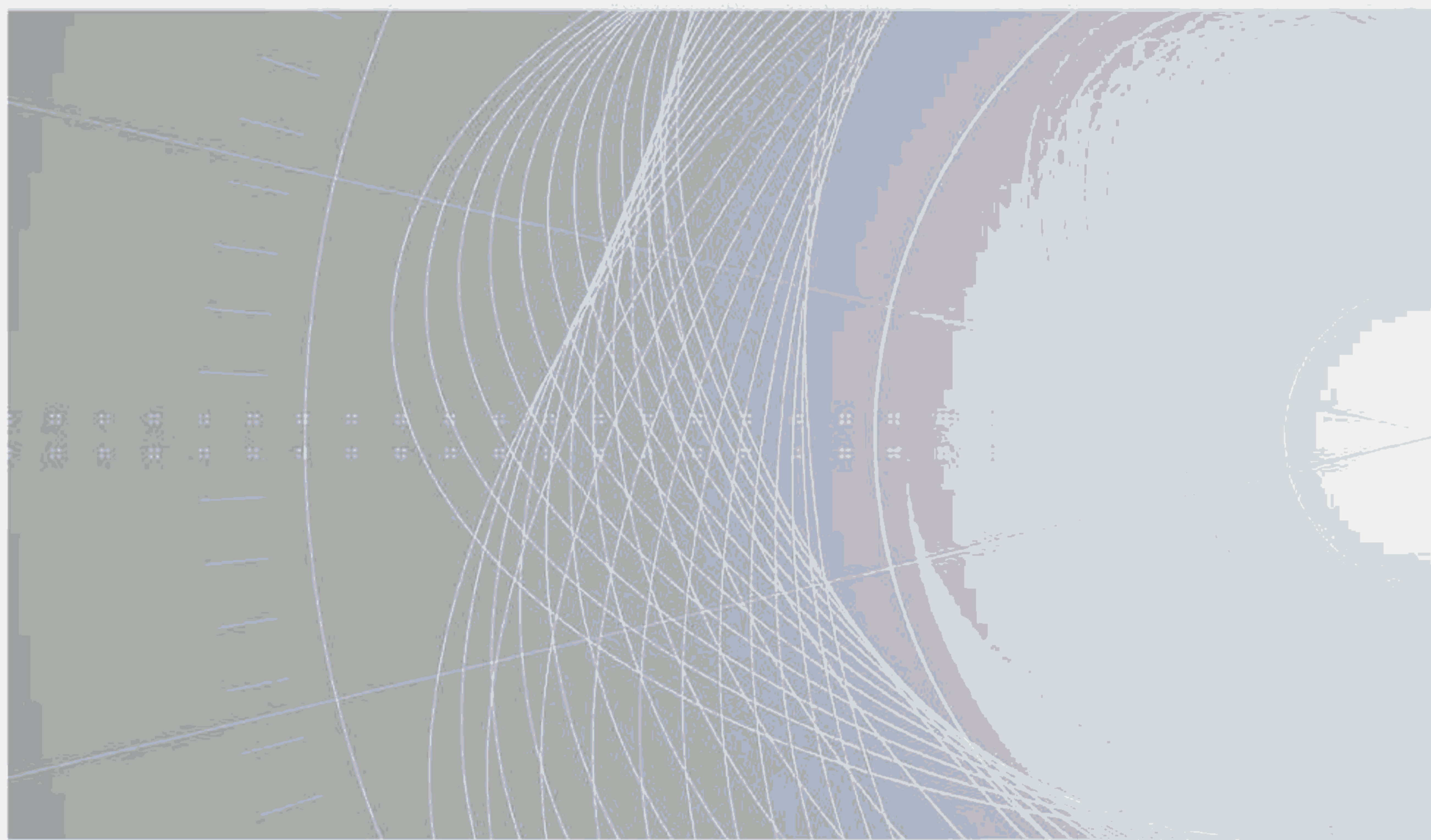


INTERNATIONAL STANDARD

NORME INTERNATIONALE

**Appliance couplers for household and similar general purposes –
Part 2-3: Appliance couplers with a degree of protection higher than IPX0**

**Connecteurs pour usages domestiques et usages généraux analogues –
Partie 2-3: Connecteurs avec degré de protection supérieur à IPX0**





IEC 60320-2-3

Edition 2.0 2018-06

INTERNATIONAL STANDARD

NORME INTERNATIONALE

**Appliance couplers for household and similar general purposes –
Part 2-3: Appliance couplers with a degree of protection higher than IPX0**

**Connecteurs pour usages domestiques et usages généraux analogues –
Partie 2-3: Connecteurs avec degré de protection supérieur à IPX0**

INTERNATIONAL
ELECTROTECHNICAL
COMMISSION

COMMISSION
ELECTROTECHNIQUE
INTERNATIONALE

ICS 29.120.30

ISBN 978-2-8322-5823-1

<p>Warning! Make sure that you obtained this publication from an authorized distributor.</p> <p>Attention! Veuillez vous assurer que vous avez obtenu cette publication via un distributeur agréé.</p>
--

CONTENTS

FOREWORD.....	3
1 Scope.....	5
2 Normative references	5
3 Terms and definitions	5
4 General requirements	6
5 General notes on tests	6
6 Standard ratings	6
7 Classification	6
8 Marking	6
9 Dimensions and compatibility	7
10 Protection against electric shock	7
11 Provision for earthing	7
12 Terminals and terminations.....	8
13 Construction	8
14 Moisture resistance	9
15 Insulation resistance and electric strength	9
16 Forces necessary to insert and to withdraw the connector/appliance outlet.....	10
17 Operation of contacts	12
18 Resistance to heating of appliance couplers for hot conditions or very hot conditions.....	12
19 Breaking capacity	12
20 Normal operation	12
21 Temperature rise	12
22 Cords and their connection	12
23 Mechanical strength	13
24 Resistance to heat and ageing.....	14
25 Screws, current-carrying parts and connections.....	14
26 Clearances, creepage distances and solid insulation	14
27 Resistance of insulating material to heat, fire and tracking	14
28 Resistance to rusting	14
29 Electromagnetic compatibility (EMC) requirements	14
Annex A (normative) Proof tracking test.....	15
Annex B (normative) Routine tests for factory wired appliance couplers related to safety.....	16
Annex C (normative) Test schedule	17
Annex D (informative) Comparison of typical conductor cross-sectional areas	18
Figure 101 – Example of apparatus for inadvertent disengagement (see 16.101)	11
Table 101 – Pull forces for retaining devices.....	12
Table 10 – Types of cord for the rewirable connector/plug connector test	13

INTERNATIONAL ELECTROTECHNICAL COMMISSION

**APPLIANCE COUPLERS FOR HOUSEHOLD
AND SIMILAR GENERAL PURPOSES –****Part 2-3: Appliance couplers with a degree
of protection higher than IPX0**

FOREWORD

- 1) The International Electrotechnical Commission (IEC) is a worldwide organization for standardization comprising all national electrotechnical committees (IEC National Committees). The object of IEC is to promote international co-operation on all questions concerning standardization in the electrical and electronic fields. To this end and in addition to other activities, IEC publishes International Standards, Technical Specifications, Technical Reports, Publicly Available Specifications (PAS) and Guides (hereafter referred to as "IEC Publication(s)"). Their preparation is entrusted to technical committees; any IEC National Committee interested in the subject dealt with may participate in this preparatory work. International, governmental and non-governmental organizations liaising with the IEC also participate in this preparation. IEC collaborates closely with the International Organization for Standardization (ISO) in accordance with conditions determined by agreement between the two organizations.
- 2) The formal decisions or agreements of IEC on technical matters express, as nearly as possible, an international consensus of opinion on the relevant subjects since each technical committee has representation from all interested IEC National Committees.
- 3) IEC Publications have the form of recommendations for international use and are accepted by IEC National Committees in that sense. While all reasonable efforts are made to ensure that the technical content of IEC Publications is accurate, IEC cannot be held responsible for the way in which they are used or for any misinterpretation by any end user.
- 4) In order to promote international uniformity, IEC National Committees undertake to apply IEC Publications transparently to the maximum extent possible in their national and regional publications. Any divergence between any IEC Publication and the corresponding national or regional publication shall be clearly indicated in the latter.
- 5) IEC itself does not provide any attestation of conformity. Independent certification bodies provide conformity assessment services and, in some areas, access to IEC marks of conformity. IEC is not responsible for any services carried out by independent certification bodies.
- 6) All users should ensure that they have the latest edition of this publication.
- 7) No liability shall attach to IEC or its directors, employees, servants or agents including individual experts and members of its technical committees and IEC National Committees for any personal injury, property damage or other damage of any nature whatsoever, whether direct or indirect, or for costs (including legal fees) and expenses arising out of the publication, use of, or reliance upon, this IEC Publication or any other IEC Publications.
- 8) Attention is drawn to the Normative references cited in this publication. Use of the referenced publications is indispensable for the correct application of this publication.
- 9) Attention is drawn to the possibility that some of the elements of this IEC Publication may be the subject of patent rights. IEC shall not be held responsible for identifying any or all such patent rights.

International Standard IEC 60320-2-3 has been prepared by subcommittee 23G: Appliance couplers, of IEC technical committee 23: Electrical accessories.

This second edition cancels and replaces the first edition published in 1998 and Amendment 1:2004. This edition constitutes a technical revision.

This edition includes the following significant technical changes with respect to the previous edition:

- a) Aligned with IEC 60320-1:2015.
- b) The scope is extended to cover current ratings up to and including 16 A.
- c) The scope is extended to cover Class I appliance couplers.

- d) The scope is extended to cover appliance couplers for hot and very hot conditions.
- e) Added classification regarding the use of retaining devices.
- f) Added classification for indoor and outdoor use.

The text of this International Standard is based on the following documents:

FDIS	Report on voting
23G/401/FDIS	23G/403/RVD

Full information on the voting for the approval of this International Standard can be found in the report on voting indicated in the above table.

This document has been drafted in accordance with the ISO/IEC Directives, Part 2.

This Part 2-3 is to be used in conjunction with IEC 60320-1: *Appliance couplers for household and similar general purposes – Part 1: General requirements*. It was established on the basis of the third edition of that standard (2015).

The clauses of this standard supplement or modify the corresponding clauses in IEC 60320-1. When a particular subclause or annex of Part 1 is not mentioned in this Part 2-3, the subclause or annex of IEC 60320-1 applies as far as is reasonable. Where this standard states “addition”, “amendment” or “replacement”, the relevant requirement, test specification or explanatory matter in IEC 60320-1 is to be adapted accordingly.

Subclauses which are additional to those in Part 1 are numbered starting from 101.

In this particular standard the following print types are used:

- requirements: in roman type;
- *test specifications: in italic type;*
- explanatory matter: in smaller roman type.

A list of all parts in the IEC 60320 series, published under the general title *Appliance couplers for household and similar general purposes*, can be found on the IEC website.

The committee has decided that the contents of this document will remain unchanged until the stability date indicated on the IEC website under "<http://webstore.iec.ch>" in the data related to the specific document. At this date, the document will be

- reconfirmed,
- withdrawn,
- replaced by a revised edition, or
- amended.

APPLIANCE COUPLERS FOR HOUSEHOLD AND SIMILAR GENERAL PURPOSES –

Part 2-3: Appliance couplers with a degree of protection higher than IPX0

1 Scope

This clause of IEC 60320-1 applies with the following addition:

This document applies to appliance couplers with a degree of protection against ingress of water higher than IPX0.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

This clause of IEC 60320-1 applies with the following additions:

IEC 60320-1, *Appliance couplers for household and similar general purposes – Part 1: General requirements*

IEC 60320-3, *Appliance couplers for household and similar general purposes – Part 3: Standard sheets and gauges*

IEC 60529, *Degrees of protection provided by enclosures (IP code)*

3 Terms and definitions

This clause of IEC 60320-1 applies with the following additions:

3.101

accessible surface

surface of an accessory that can be touched by means of the test probe B of IEC 61032 (standard test finger), when the accessory is assembled as in normal use and in the following conditions:

- a) for connectors and appliance outlets: without the complementary accessory in engagement but with the cover in the open position;
- b) for plug connectors and appliance inlets: with the complementary accessory in the most unfavourable degree of engagement but such that electrical contact is made between the contacts (pins and tubes).

3.102

cover

part that is accessible when the accessory is in normal use and removable only with the use of a tool, but which does not require the use of a tool to open it

4 General requirements

This clause of IEC 60320-1 applies.

5 General notes on tests

This clause of IEC 60320-1 applies.

6 Standard ratings

This clause of IEC 60320-1 applies.

7 Classification

This clause of IEC 60320-1 applies with the following additions:

7.101 Retaining devices:

- a) with retaining device
- b) without retaining device

7.102 Appliance coupler without retaining device.

NOTE Only to be used where permitted by the end product standard.

8 Marking

This clause of IEC 60320-1 applies amended as follows:

8.2 *Addition:*

- IP rating.

8.4 *Addition:*

IP rating for example IPX4

NOTE 101 In the IP code the letter "X" is replaced by the relevant number.

Additional subclauses (following 8.8):

8.101 Colours of outdoor cables

Cords of non-rewirable accessories for outdoor use shall not be coloured black, green, white or brown.

8.102 Instructions for retail sale

For couplers intended for retail sale the supplier shall include an instruction leaflet, on or inside the sales package, with each coupler or accessory, clearly describing the extent of its suitability for use outdoors. Information regarding weather resistance shall be clearly visible to the purchaser and a recommendation shall be made that the cord to be fitted to the accessory should not be coloured black, green, white or brown. The instruction sheet shall include information stating that the plug connector shall be connected to the equipment and the connector to the mains supply side.

If the coupler or accessory is non-rewirable with a cord attached, each free end shall be marked for connection to the appliance or mains supply as appropriate, with guidance on the danger of an incorrect connection or of a connection to an appliance requiring the protection of an earth continuity conductor.

Except when a plug connector or appliance inlet fitted with a cord is supplied direct to a manufacturer for incorporation in other equipment, the free end of such an assembly shall have a label attached stating:

"The cord of this accessory must be properly connected to a piece of equipment before the appliance is energized."

If the coupler or accessory is rewirable, instructions shall be provided on the following:

- a) stripping lengths for sheath and insulation;
- b) identity of accessories to be connected to appliance or mains cord, as appropriate;
- c) connection of brown wire to terminal marked L and blue wire to terminal marked N;
- d) importance of correct assembly of cord anchorage including need for at least 3 mm of sheath to protrude beyond the clamping device;
- e) suitable for use with circular type cords only.

Compliance with the requirements of 8.101 and 8.102 is checked by inspection.

9 Dimensions and compatibility

This clause of IEC 60320-1 applies with the following addition:

Additional subclause (following 9.5):

9.101 Retaining devices

For standardized appliance couplers the provision for retaining the connector in the plug connector or appliance inlet shall comply with the relevant standard sheets.

NOTE The relevant standard sheets can be found in IEC 60320-3.

Compliance is checked by the tests of 16.101.

For non-standardized appliance couplers the provision for retaining the connector in the plug connector or appliance inlet shall comply with the manufacturer's specifications.

10 Protection against electric shock

This clause of IEC 60320-1 applies amended as follows:

10.1 Addition after the second paragraph:

Test is performed with the cover open.

11 Provision for earthing

This clause of IEC 60320-1 applies.

If the coupler or accessory is non-rewirable with a cord attached, each free end shall be marked for connection to the appliance or mains supply as appropriate, with guidance on the danger of an incorrect connection or of a connection to an appliance requiring the protection of an earth continuity conductor.

Except when a plug connector or appliance inlet fitted with a cord is supplied direct to a manufacturer for incorporation in other equipment, the free end of such an assembly shall have a label attached stating:

"The cord of this accessory must be properly connected to a piece of equipment before the appliance is energized."

If the coupler or accessory is rewirable, instructions shall be provided on the following:

- a) stripping lengths for sheath and insulation;
- b) identity of accessories to be connected to appliance or mains cord, as appropriate;
- c) connection of brown wire to terminal marked L and blue wire to terminal marked N;
- d) importance of correct assembly of cord anchorage including need for at least 3 mm of sheath to protrude beyond the clamping device;
- e) suitable for use with circular type cords only.

Compliance with the requirements of 8.101 and 8.102 is checked by inspection.

9 Dimensions and compatibility

This clause of IEC 60320-1 applies with the following addition:

Additional subclause (following 9.5):

9.101 Retaining devices

For standardized appliance couplers the provision for retaining the connector in the plug connector or appliance inlet shall comply with the relevant standard sheets.

NOTE The relevant standard sheets can be found in IEC 60320-3.

Compliance is checked by the tests of 16.101.

For non-standardized appliance couplers the provision for retaining the connector in the plug connector or appliance inlet shall comply with the manufacturer's specifications.

10 Protection against electric shock

This clause of IEC 60320-1 applies amended as follows:

10.1 Addition after the second paragraph:

Test is performed with the cover open.

11 Provision for earthing

This clause of IEC 60320-1 applies.

The cover shall be opened to its fullest extent and allowed to close under the influence of the associated spring(s), in sequence, 4 000 times at a rate of 15 ± 2 times per minute.

14 Moisture resistance

This clause of IEC 60320-1 applies amended as follows:

Replacement of the seventh paragraph:

The specimens are kept in the cabinet for 168 h (7 days).

Additional subclause:

14.101 Accessories shall have a degree of protection higher than IPX0 according to IEC 60529.

Compliance is checked by the appropriate test of IEC 60529 and with the treatment specified below, followed immediately by wiping the surplus surface water from the accessory and carrying out the electric strength test of Clause 15.

Accessories shall withstand the electric strength test and inspection shall show that water has not entered the samples to any appreciable extent and has not reached current-carrying parts.

Accessories designed for attachment by cord are tested as follows:

- a) for non-rewirable accessories, with the cord supplied;
- b) for 6 A rewirable accessories, with 0,75 mm² cord;
- c) for 10 A rewirable accessories, with 0,75 mm² and 1 mm² cord;
- d) for 16 A rewirable accessories, with 1 mm² and 1,5 mm² cord.

Appliance inlets and appliance outlets are tested when mounted in or on a suitable watertight enclosure, in accordance with the manufacturer's instructions for mounting.

Fixing screws of enclosures and covers are tightened with a torque equal to two-thirds of the appropriate torque given in Clause 25. The accessories are placed in the most unfavourable position.

Connectors and appliance outlets are tested with and also without the complementary accessory in engagement, the means for ensuring the required degree of protection against moisture (as specified in 13.102) being positioned as in normal use.

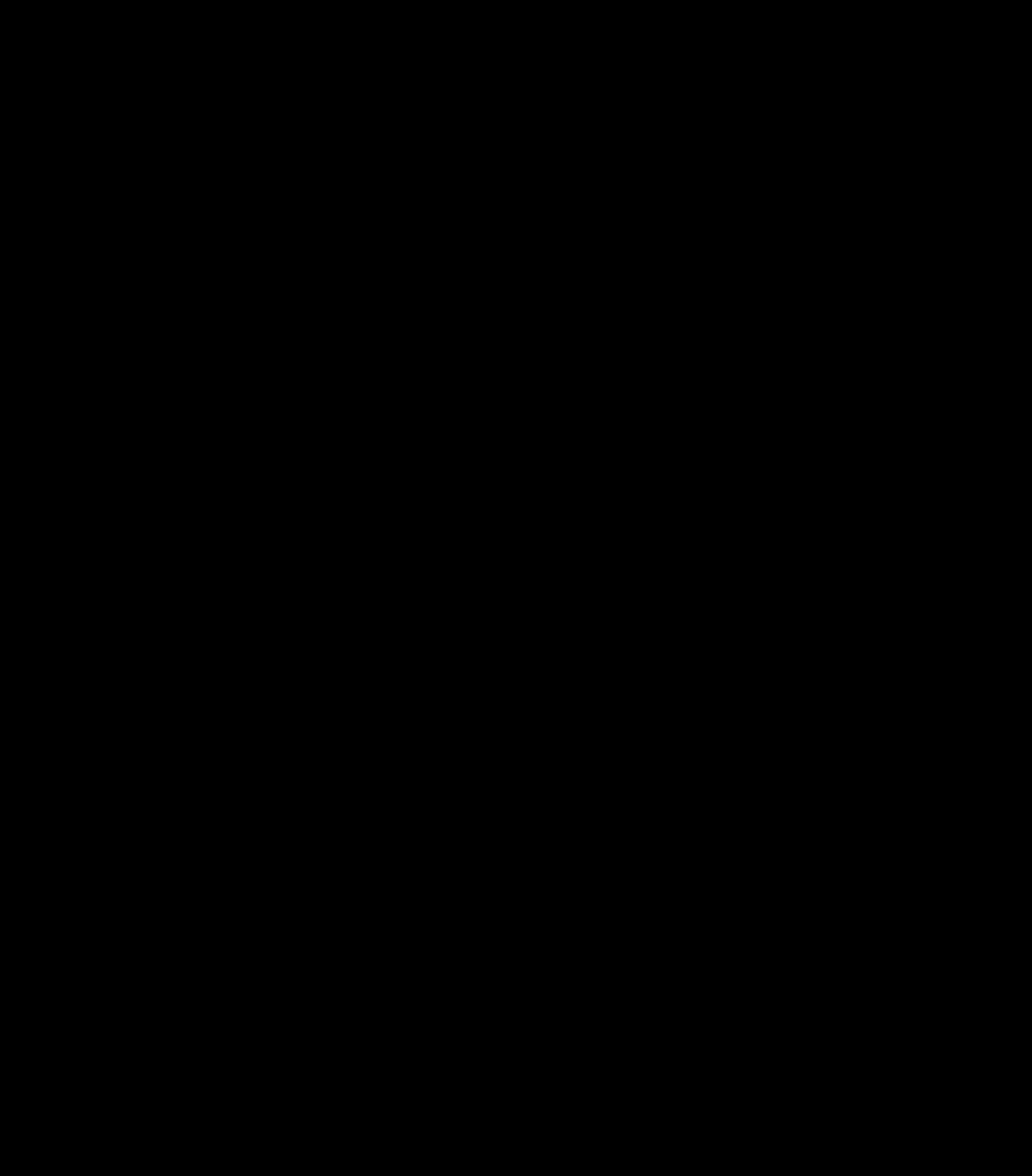
15 Insulation resistance and electric strength

This clause of IEC 60320-1 applies.

16 Forces necessary to insert and to withdraw the connector/appliance outlet

This clause of IEC 60320-1 applies with the following addition:

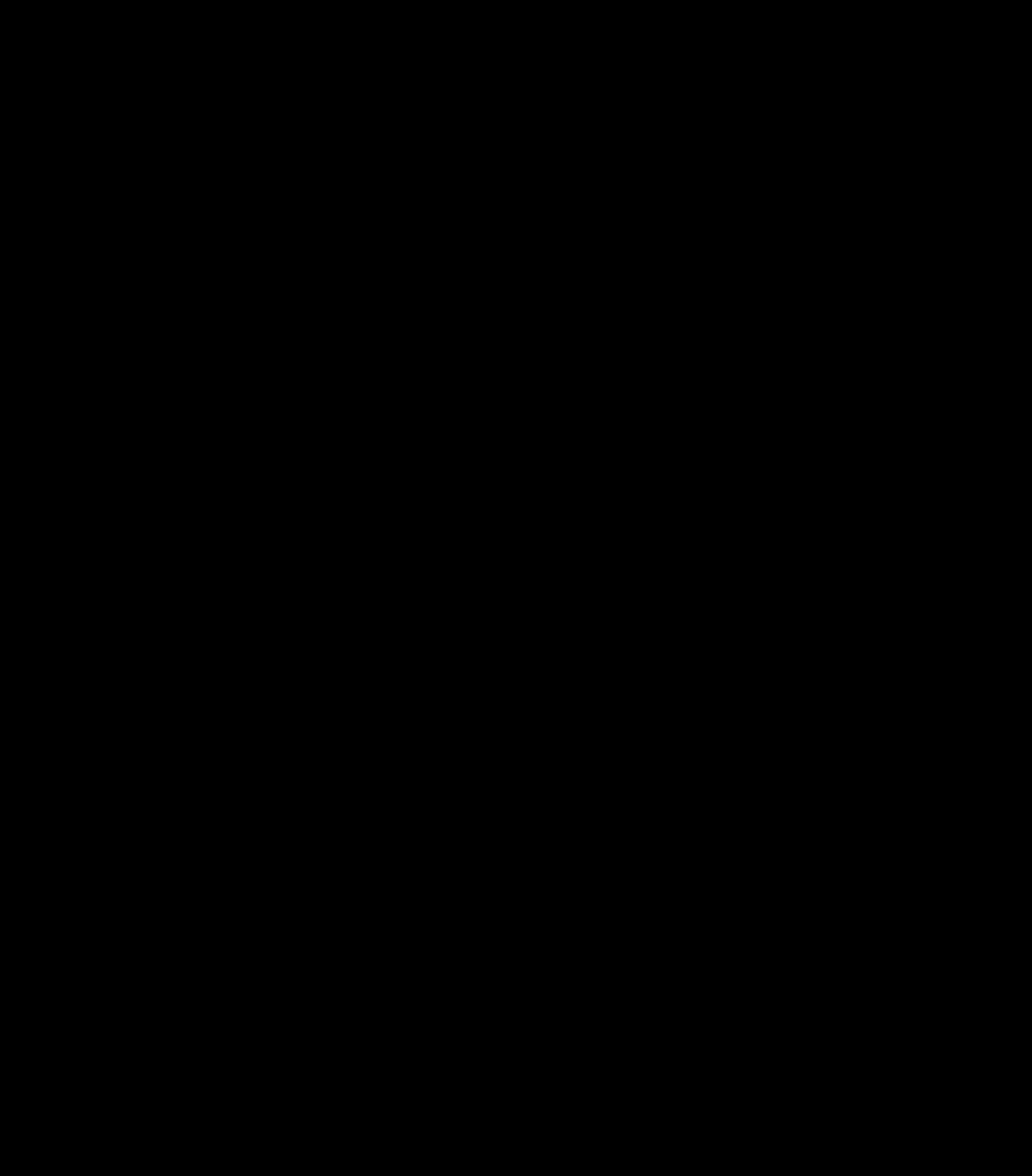
Additional subclause:



16 Forces necessary to insert and to withdraw the connector/appliance outlet

This clause of IEC 60320-1 applies with the following addition:

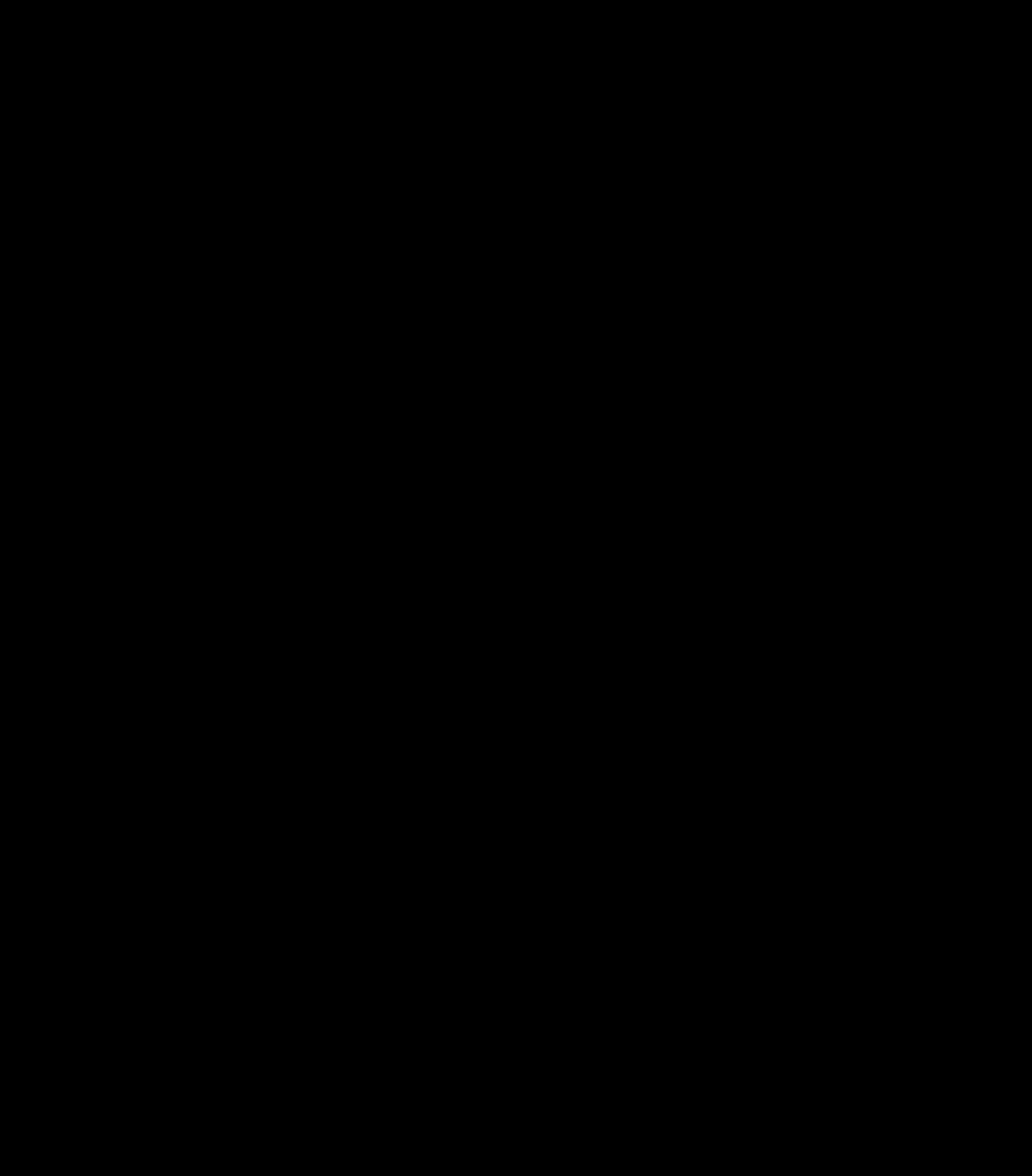
Additional subclause:



16 Forces necessary to insert and to withdraw the connector/appliance outlet

This clause of IEC 60320-1 applies with the following addition:

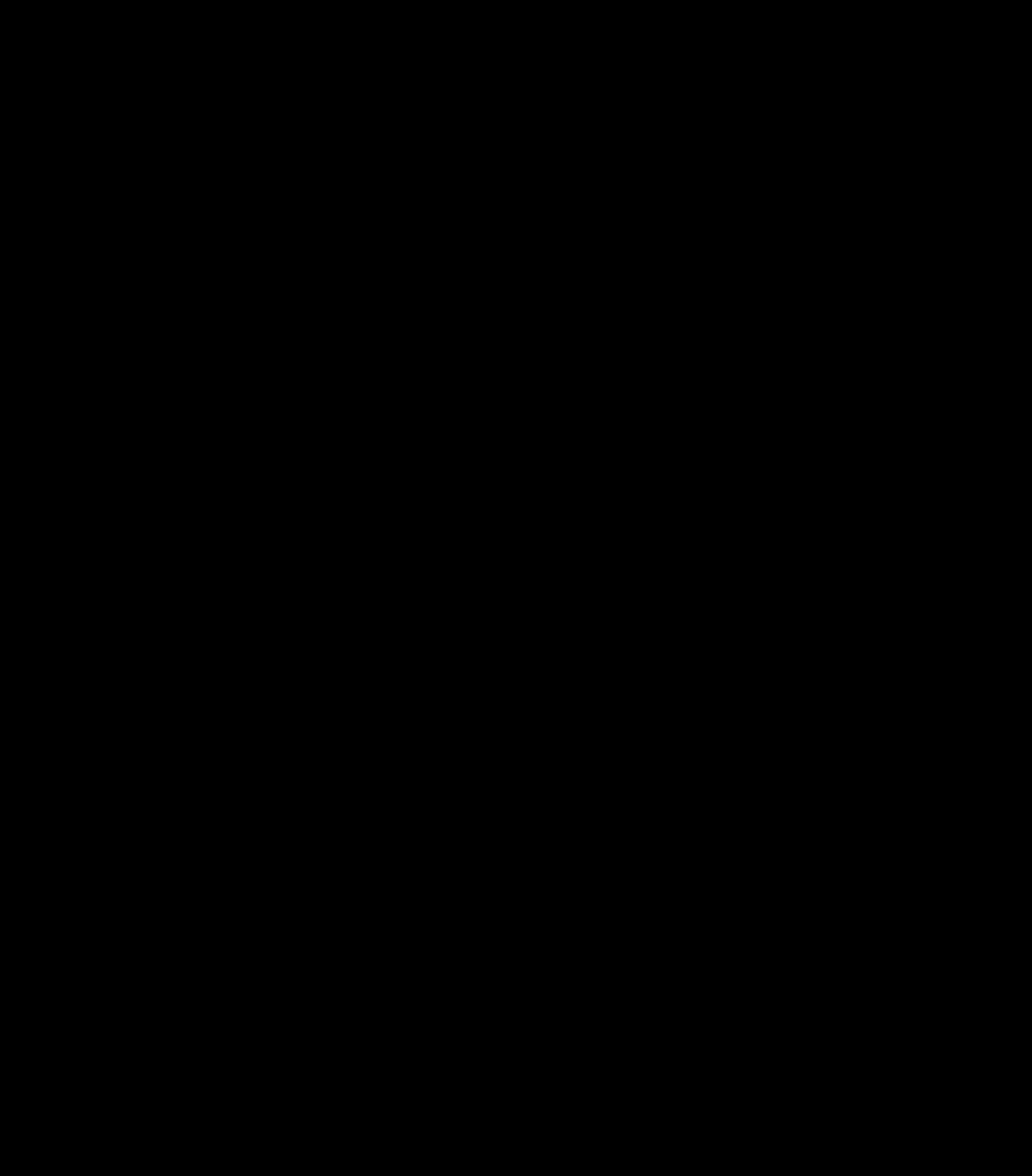
Additional subclause:



16 Forces necessary to insert and to withdraw the connector/appliance outlet

This clause of IEC 60320-1 applies with the following addition:

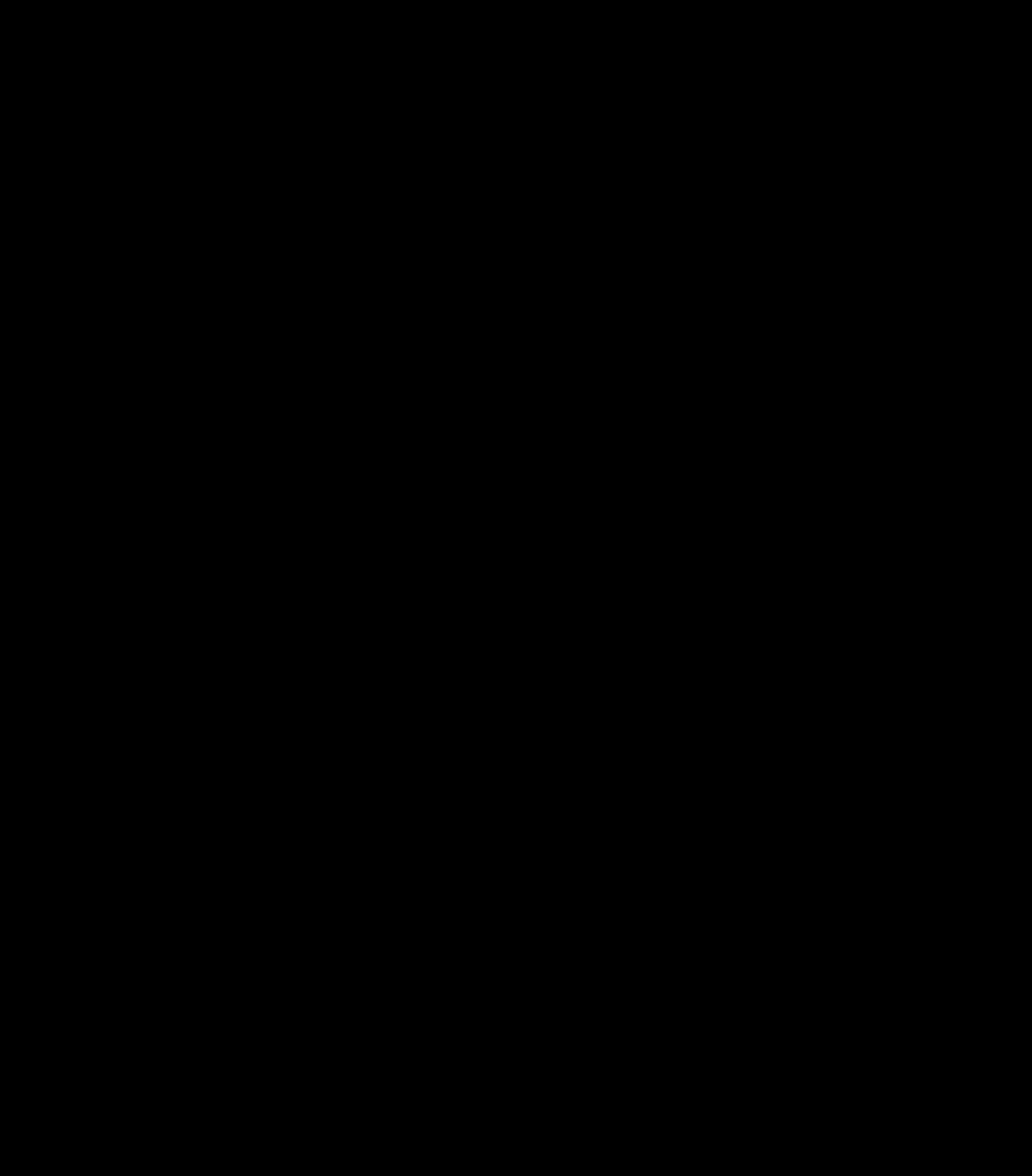
Additional subclause:



16 Forces necessary to insert and to withdraw the connector/appliance outlet

This clause of IEC 60320-1 applies with the following addition:

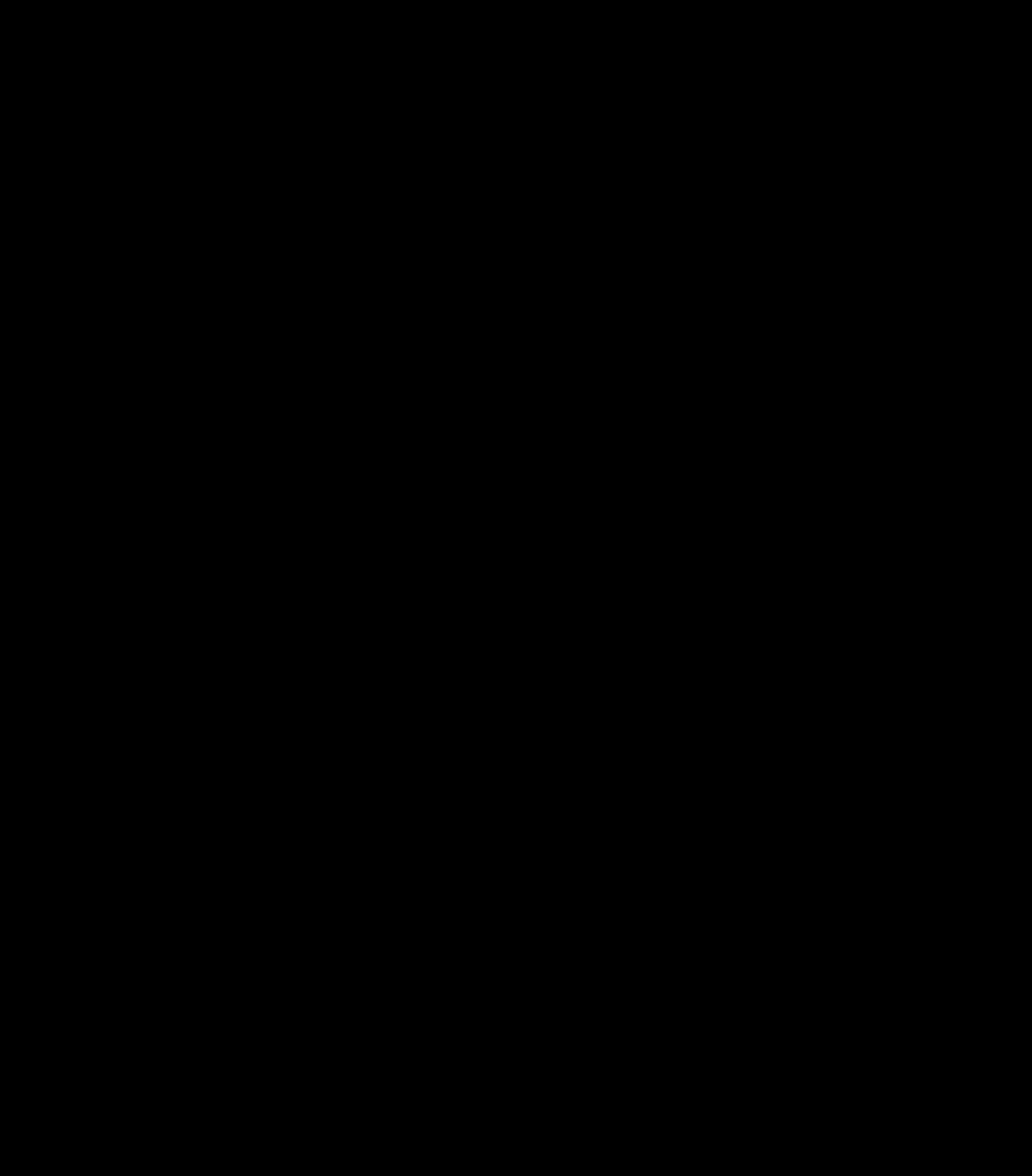
Additional subclause:



16 Forces necessary to insert and to withdraw the connector/appliance outlet

This clause of IEC 60320-1 applies with the following addition:

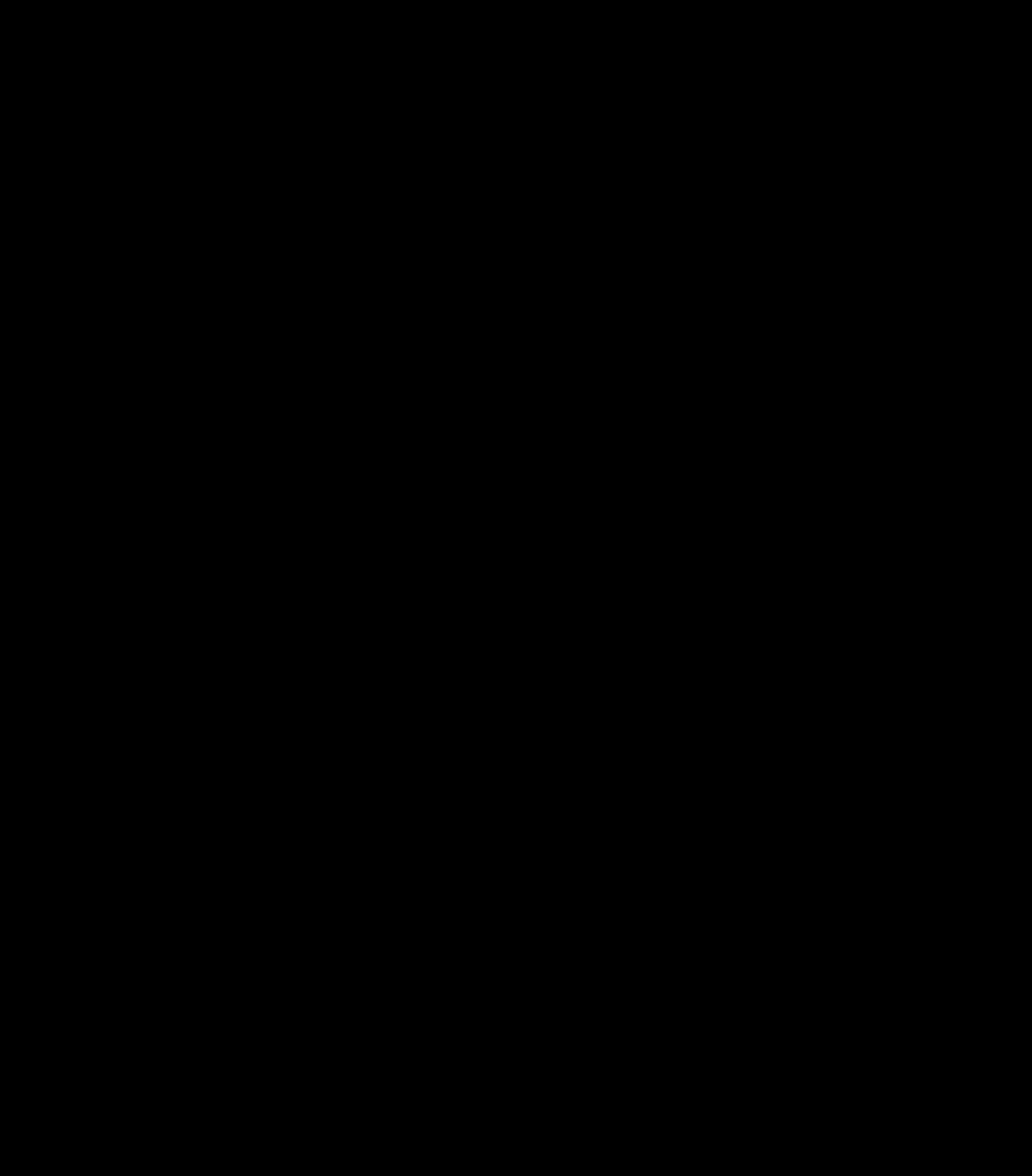
Additional subclause:



16 Forces necessary to insert and to withdraw the connector/appliance outlet

This clause of IEC 60320-1 applies with the following addition:

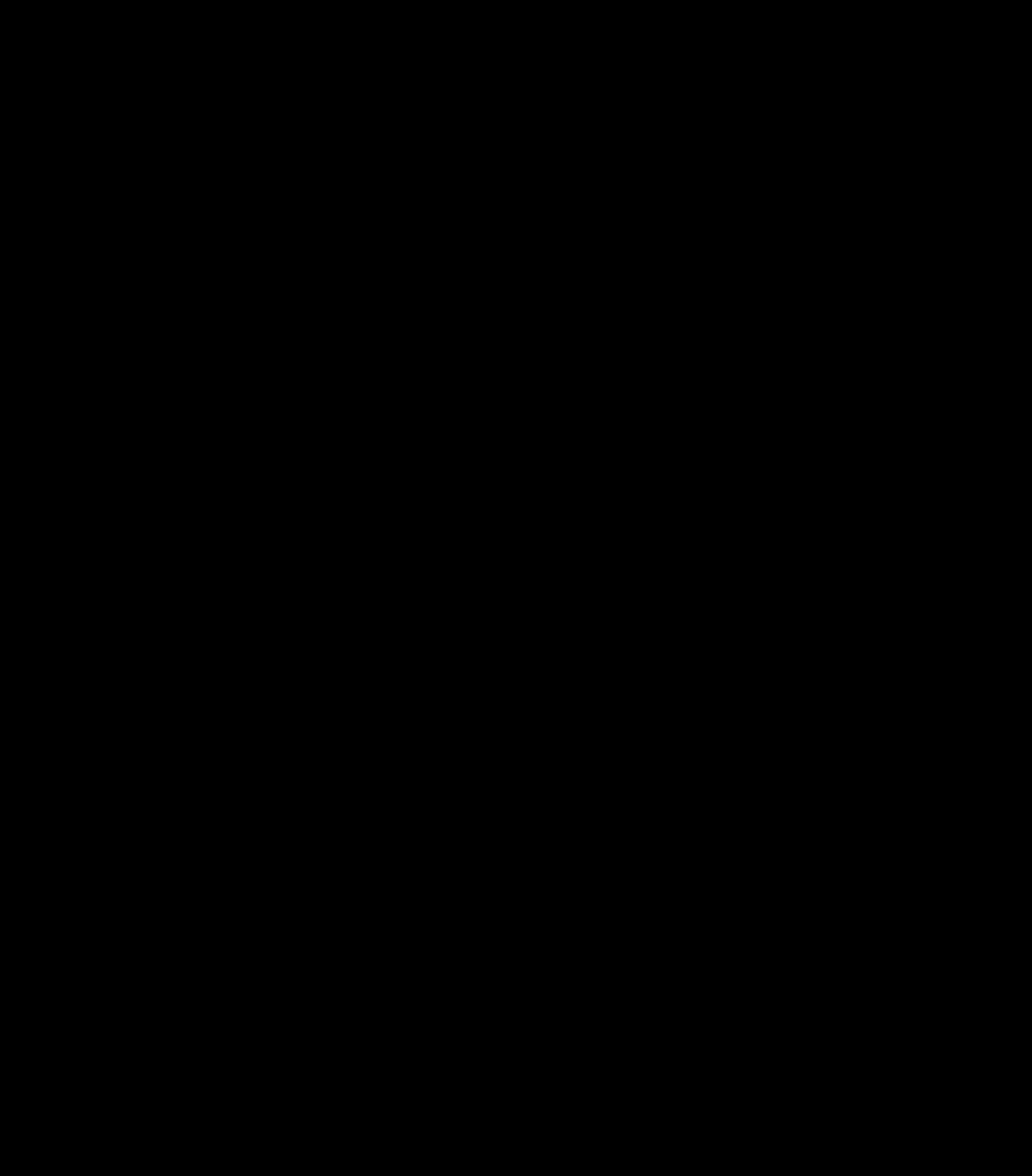
Additional subclause:



16 Forces necessary to insert and to withdraw the connector/appliance outlet

This clause of IEC 60320-1 applies with the following addition:

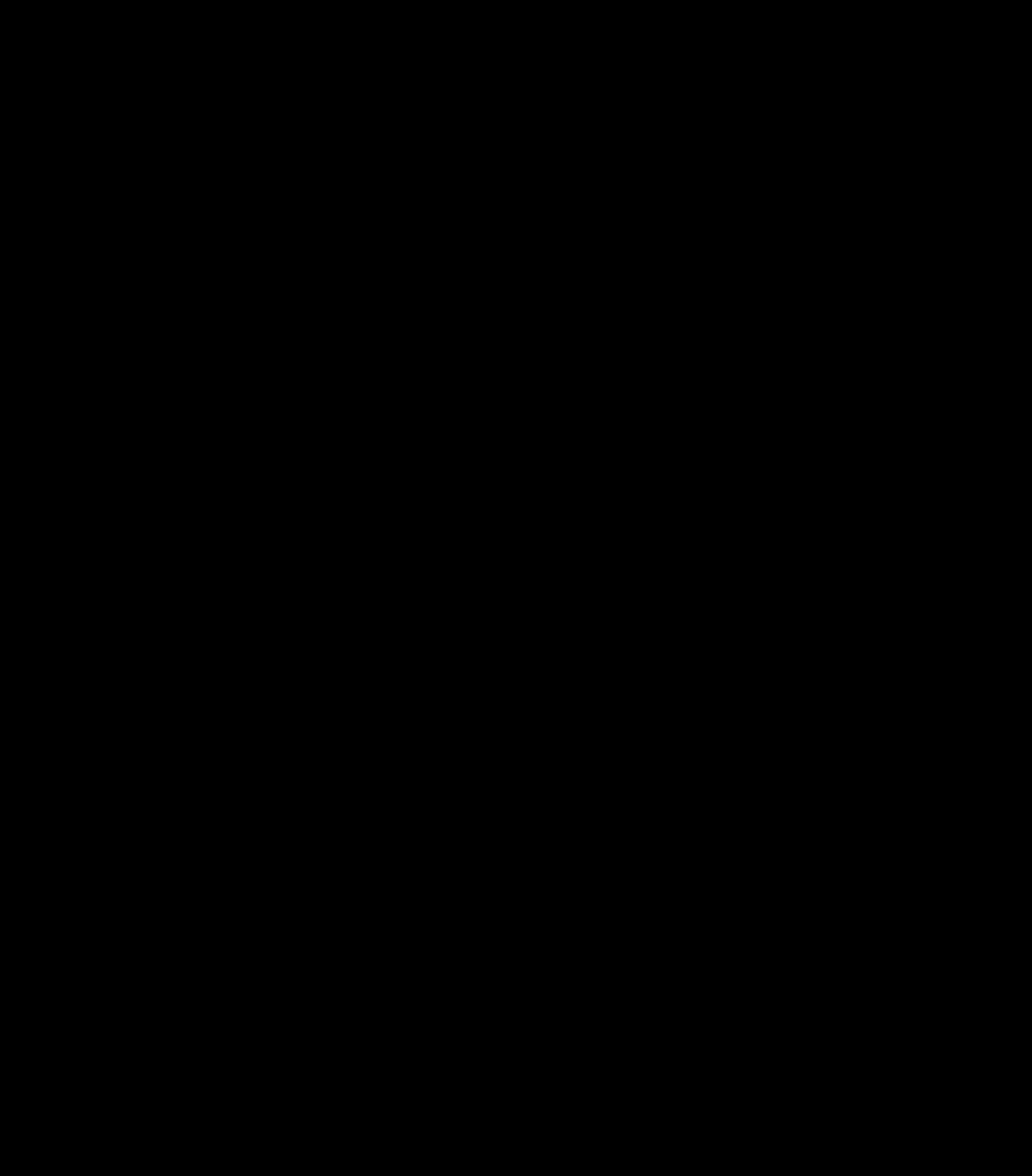
Additional subclause:



16 Forces necessary to insert and to withdraw the connector/appliance outlet

This clause of IEC 60320-1 applies with the following addition:

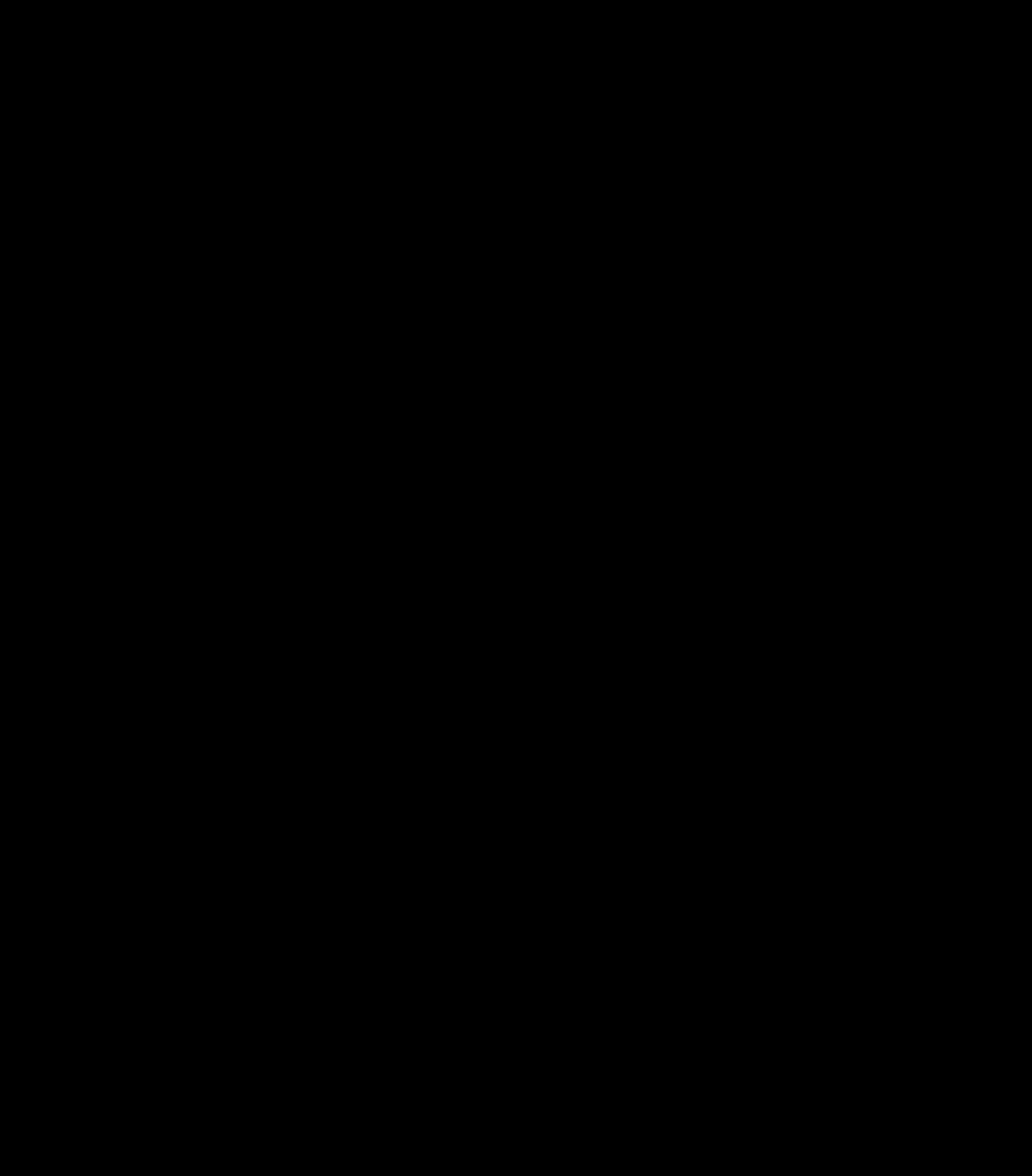
Additional subclause:



16 Forces necessary to insert and to withdraw the connector/appliance outlet

This clause of IEC 60320-1 applies with the following addition:

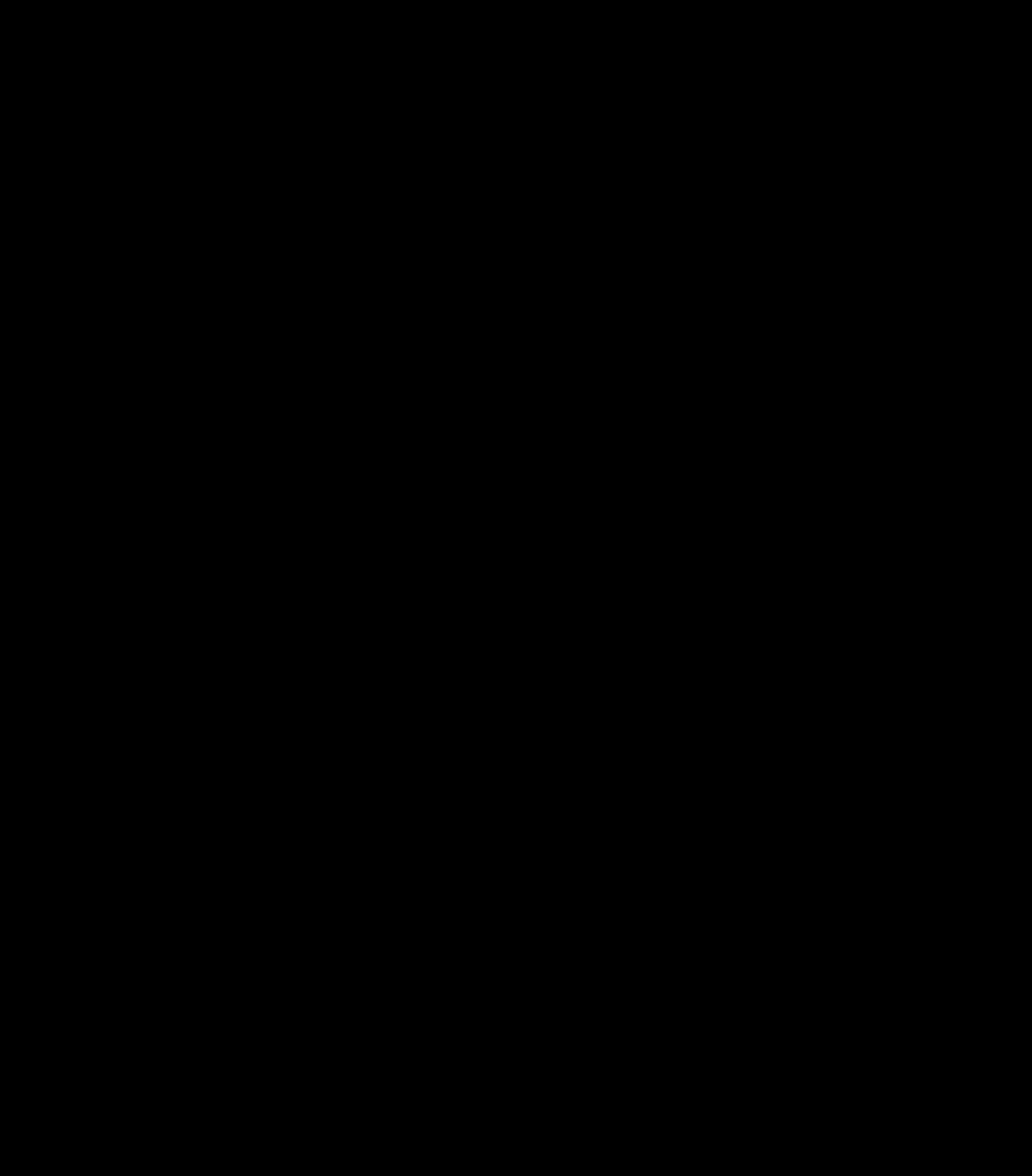
Additional subclause:



16 Forces necessary to insert and to withdraw the connector/appliance outlet

This clause of IEC 60320-1 applies with the following addition:

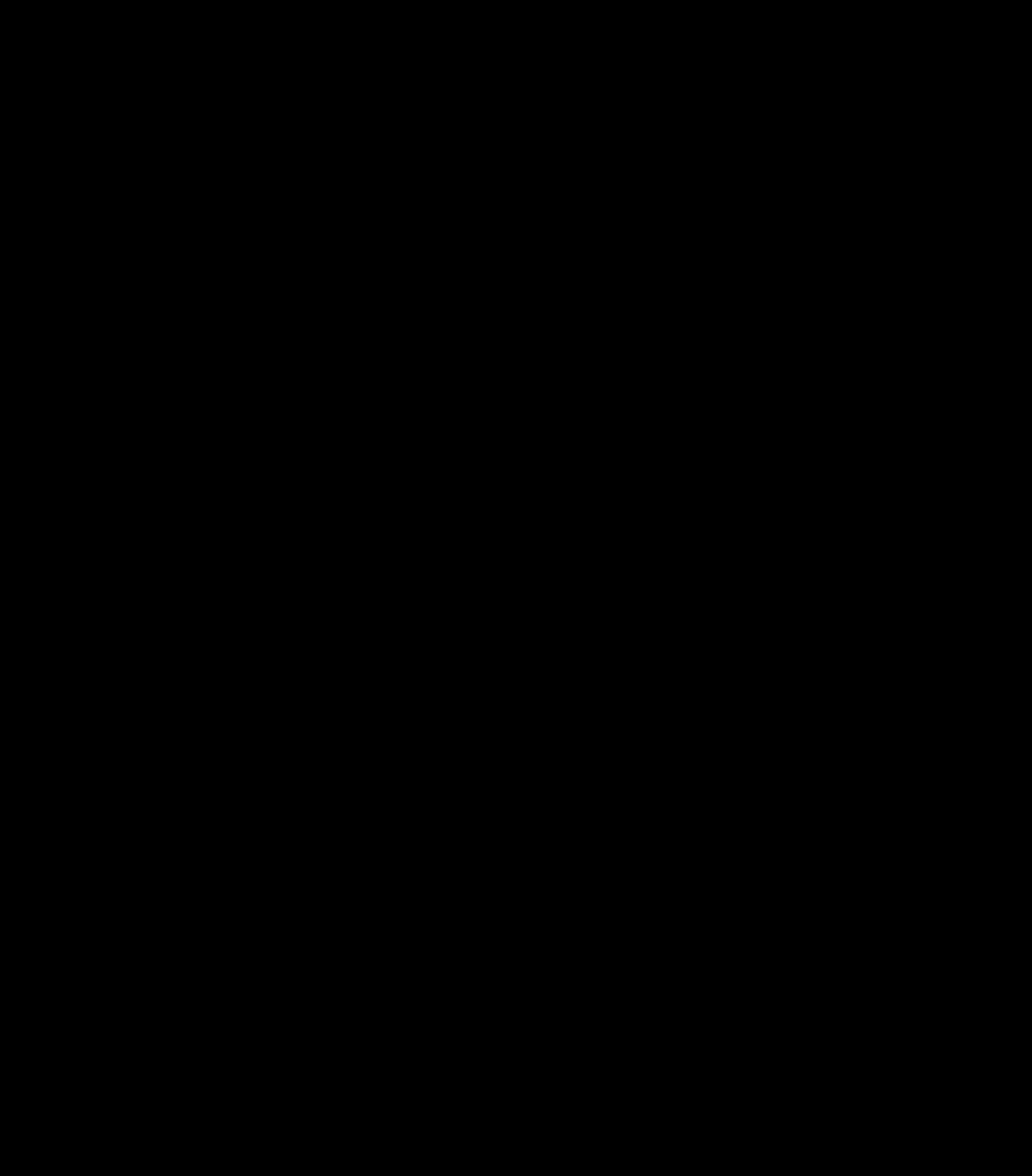
Additional subclause:



16 Forces necessary to insert and to withdraw the connector/appliance outlet

This clause of IEC 60320-1 applies with the following addition:

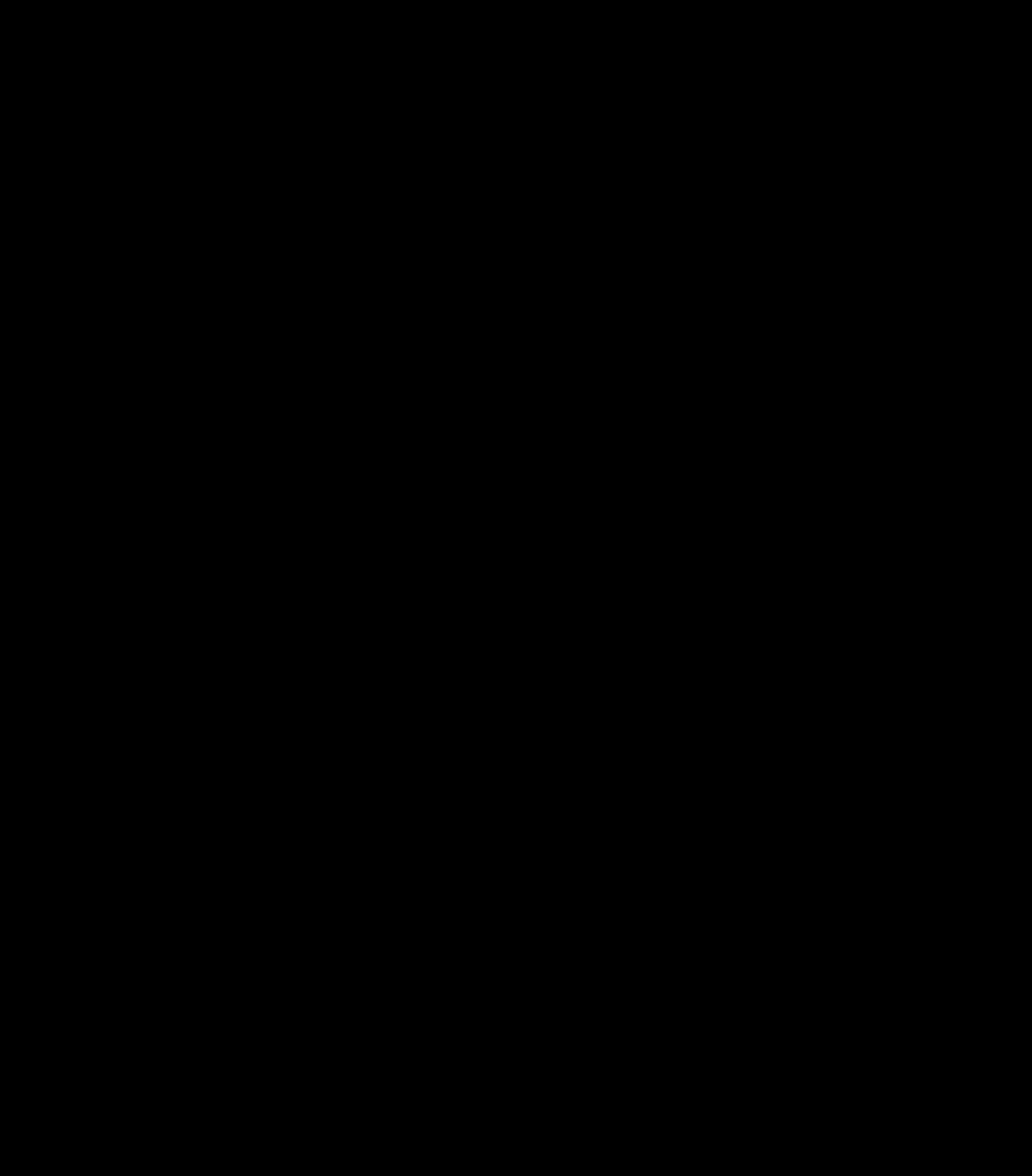
Additional subclause:



16 Forces necessary to insert and to withdraw the connector/appliance outlet

This clause of IEC 60320-1 applies with the following addition:

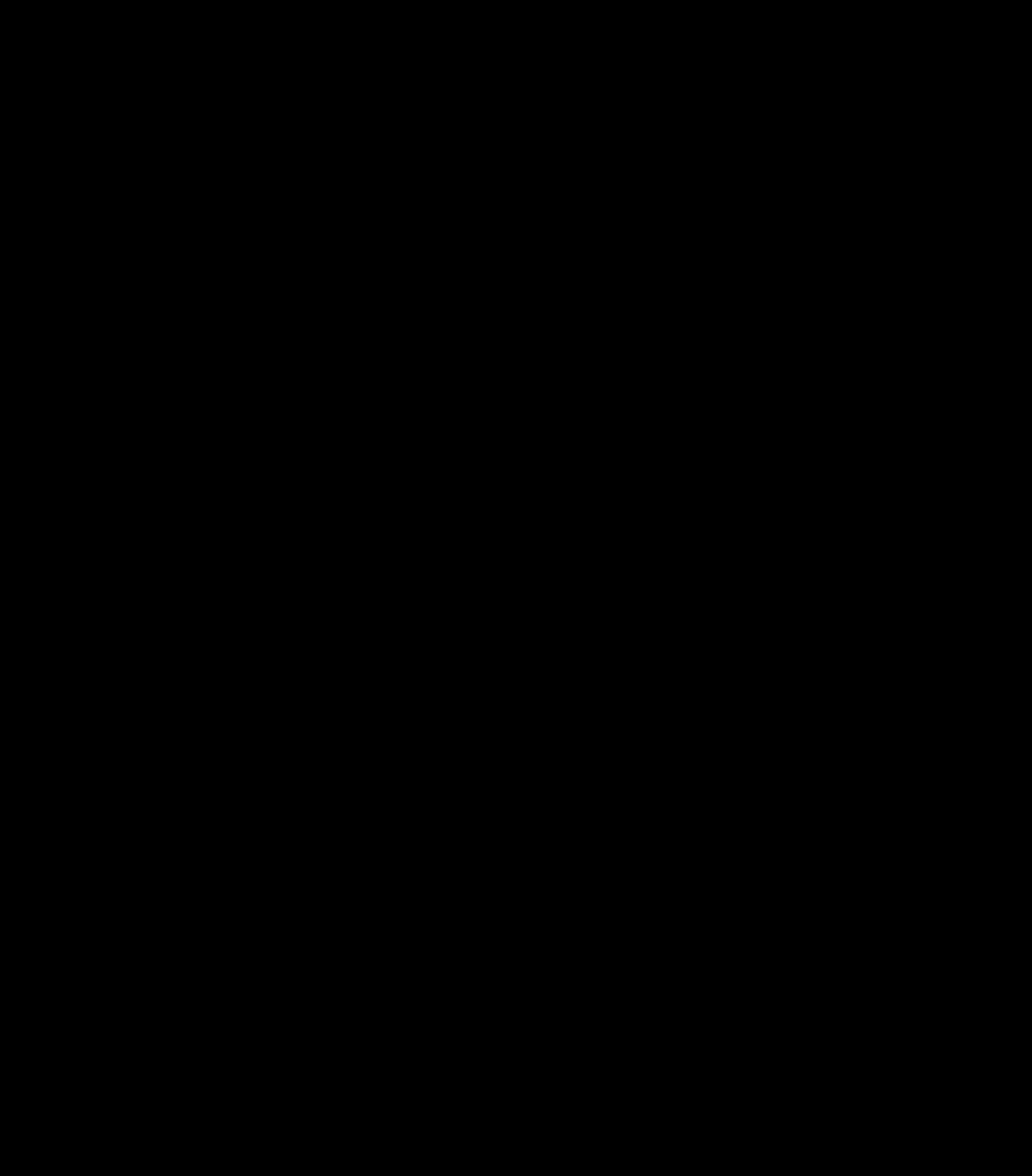
Additional subclause:



16 Forces necessary to insert and to withdraw the connector/appliance outlet

This clause of IEC 60320-1 applies with the following addition:

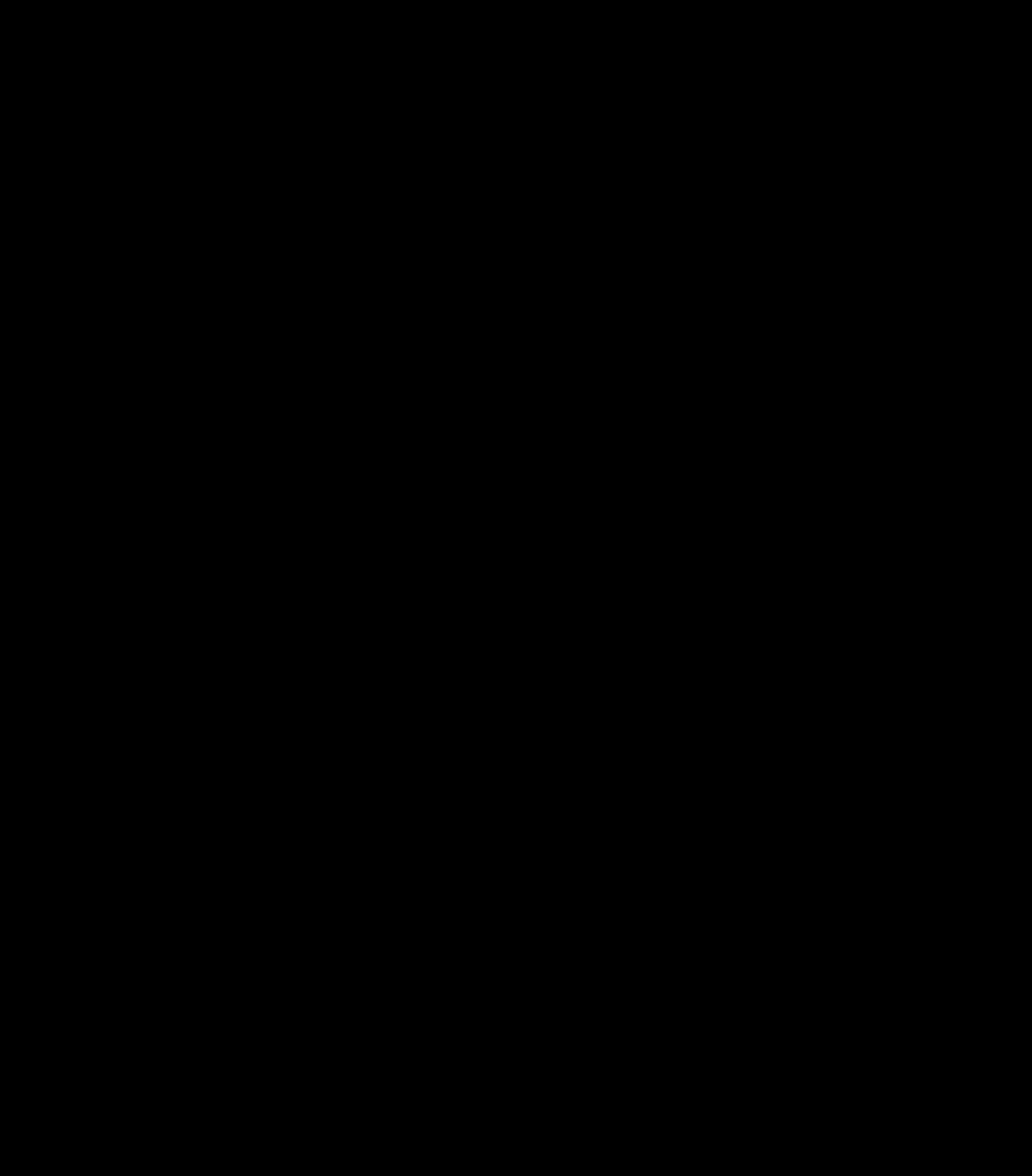
Additional subclause:



16 Forces necessary to insert and to withdraw the connector/appliance outlet

This clause of IEC 60320-1 applies with the following addition:

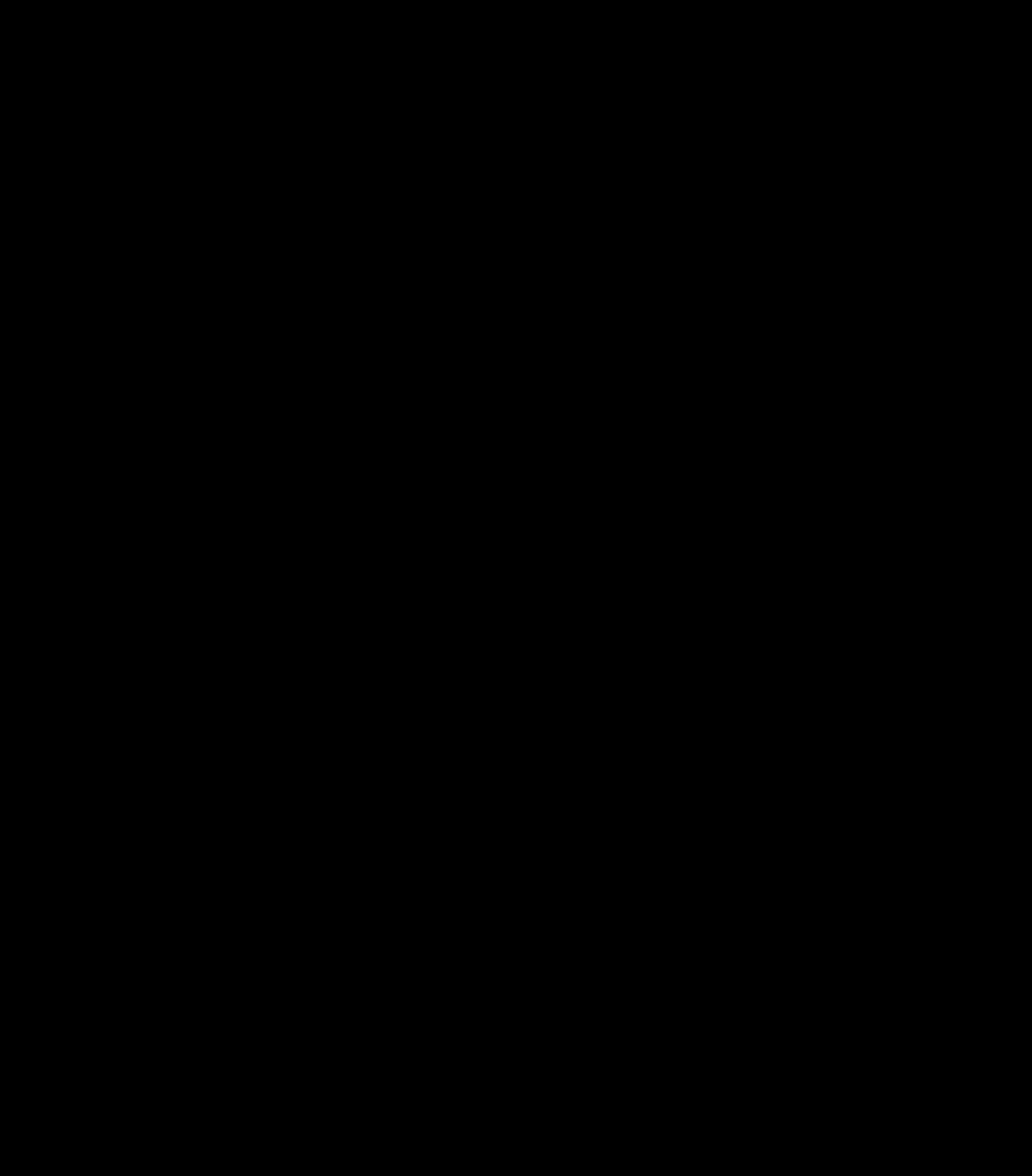
Additional subclause:



16 Forces necessary to insert and to withdraw the connector/appliance outlet

This clause of IEC 60320-1 applies with the following addition:

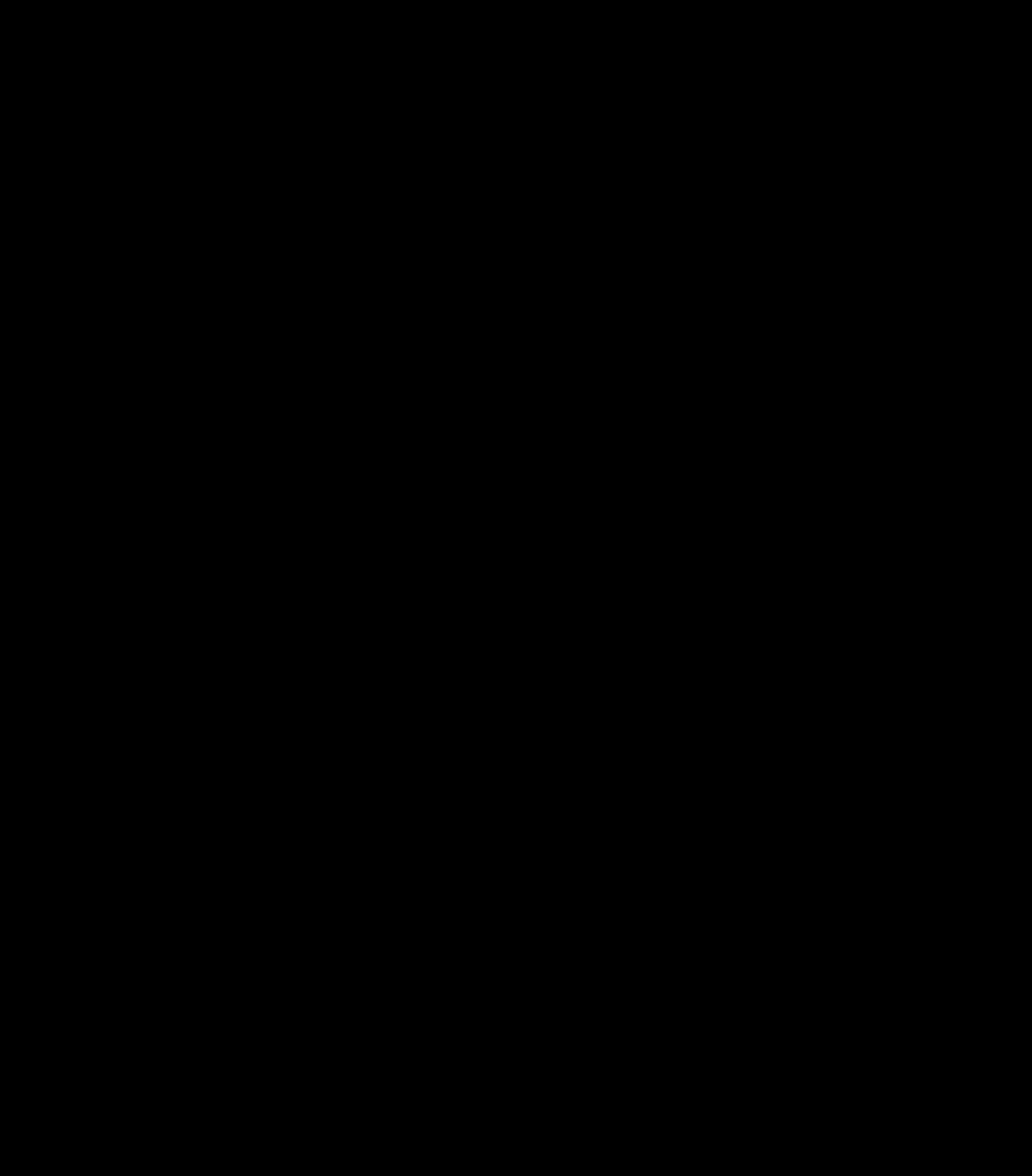
Additional subclause:



16 Forces necessary to insert and to withdraw the connector/appliance outlet

This clause of IEC 60320-1 applies with the following addition:

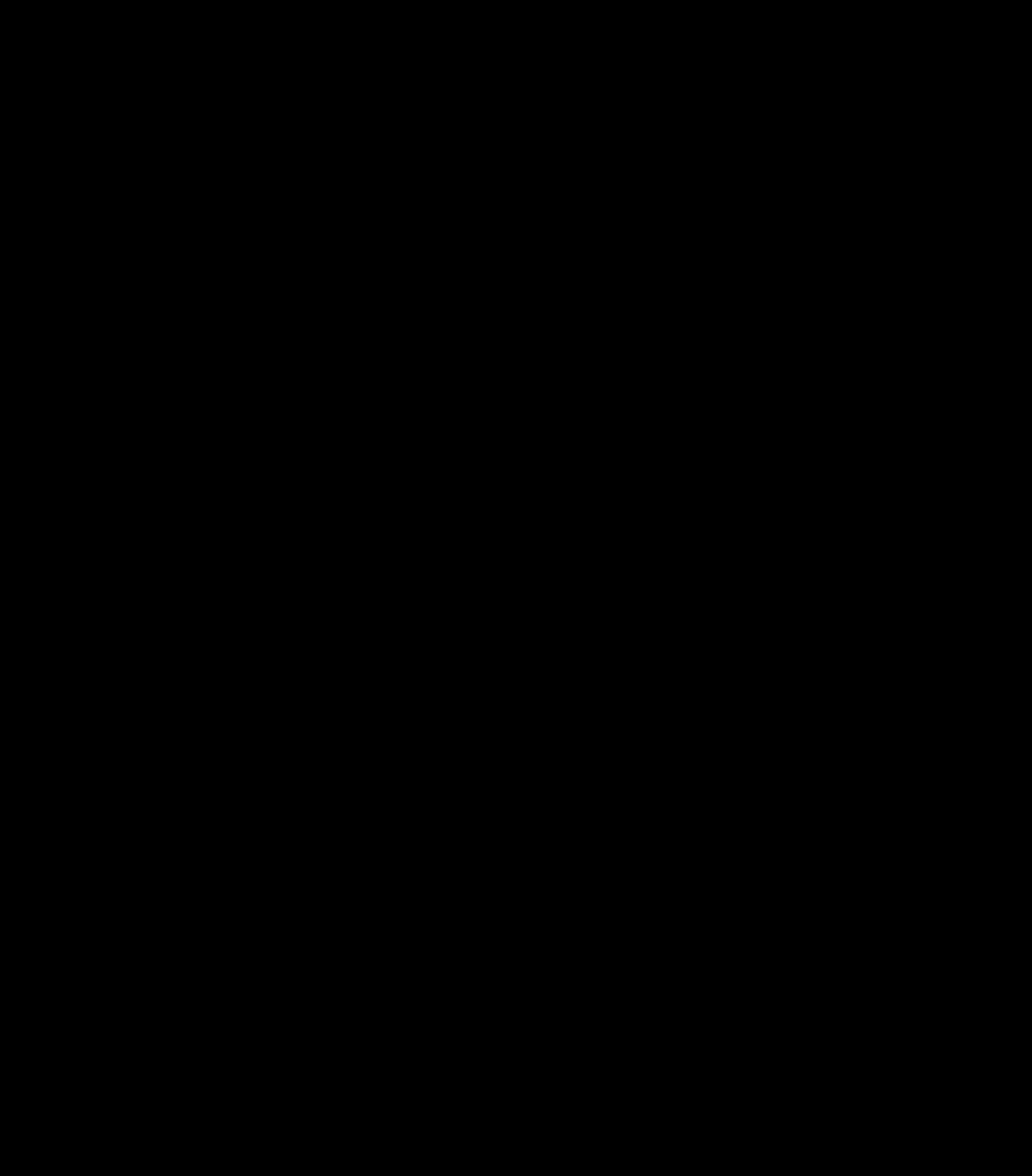
Additional subclause:



16 Forces necessary to insert and to withdraw the connector/appliance outlet

This clause of IEC 60320-1 applies with the following addition:

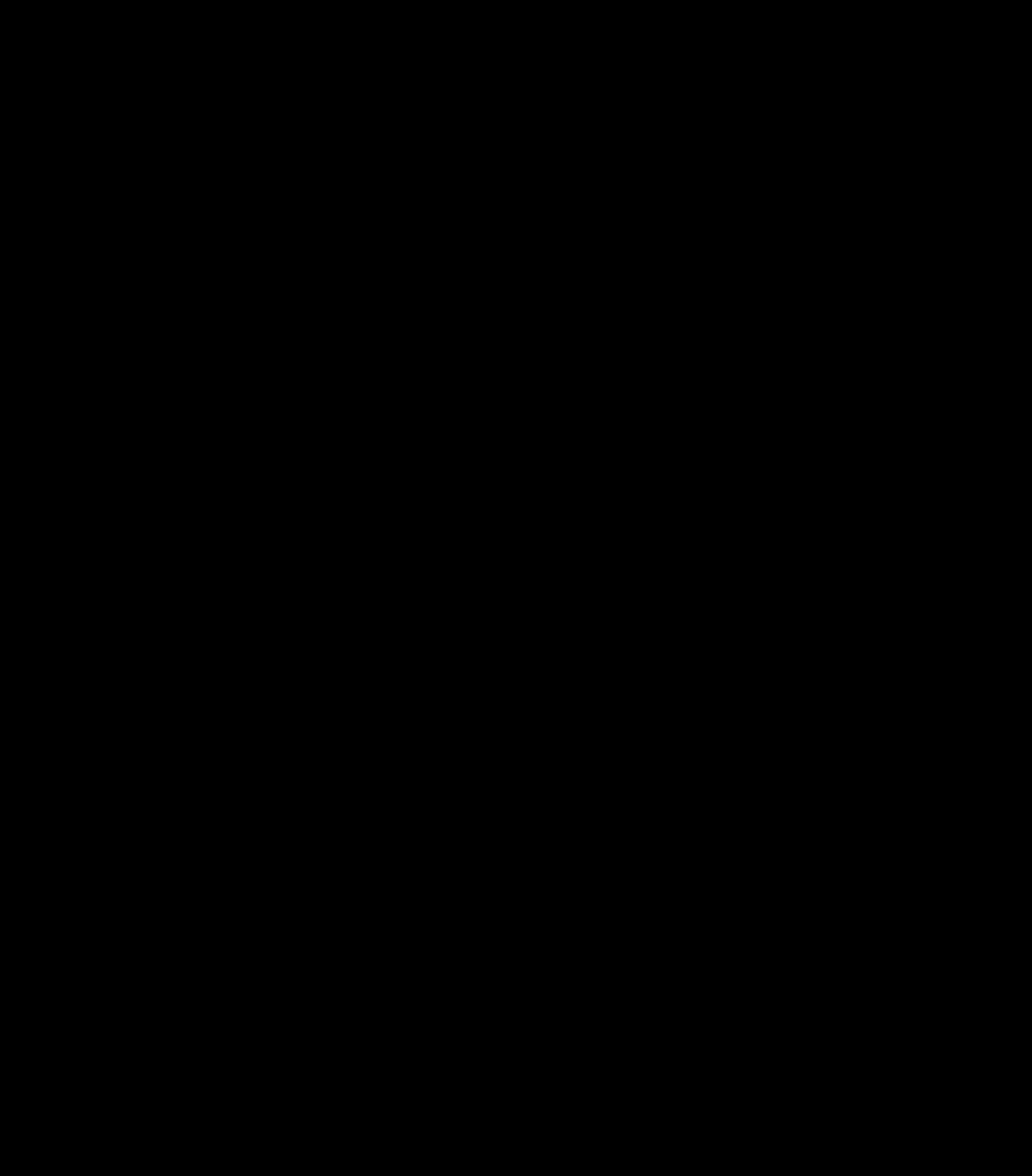
Additional subclause:



16 Forces necessary to insert and to withdraw the connector/appliance outlet

This clause of IEC 60320-1 applies with the following addition:

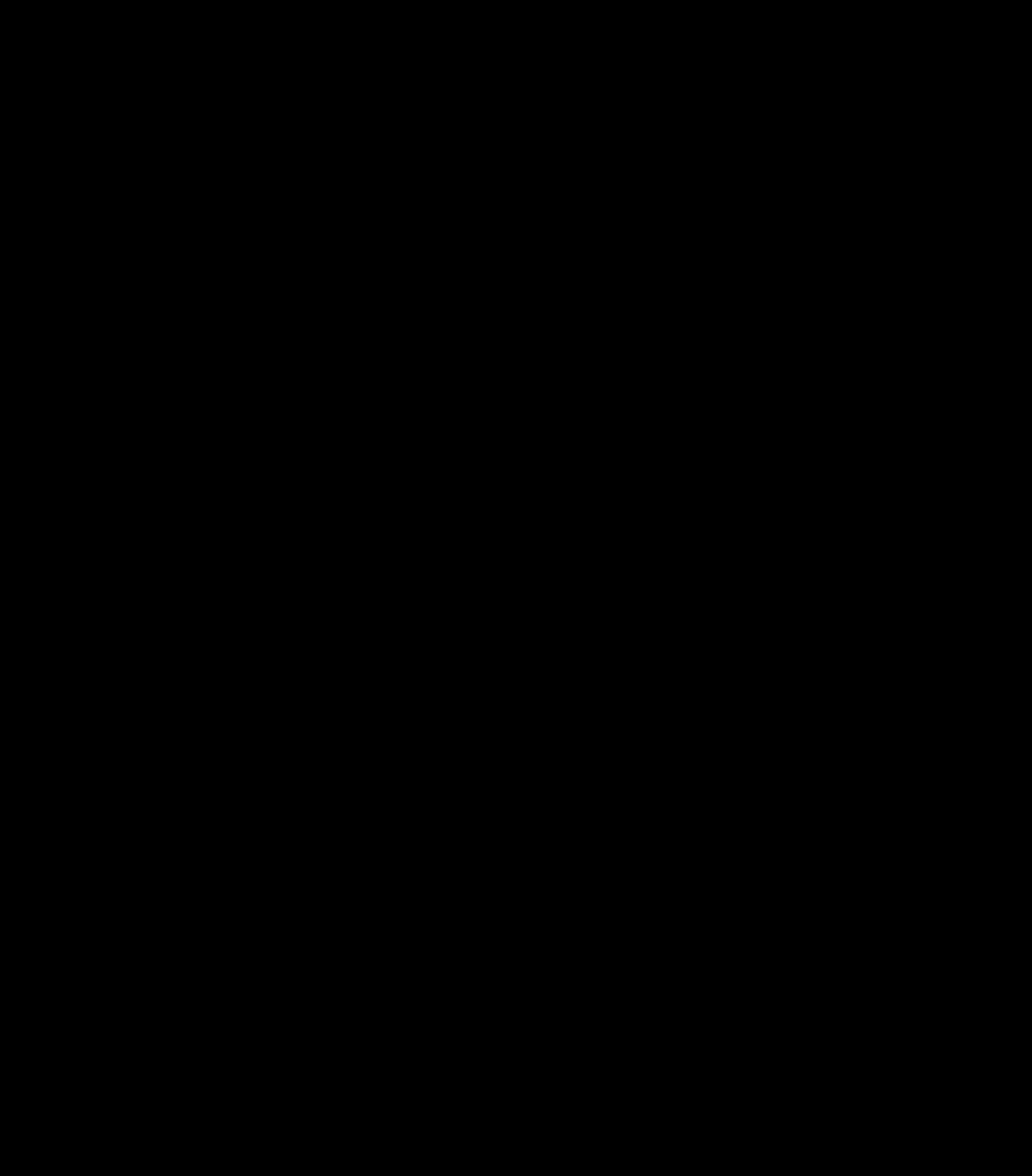
Additional subclause:



16 Forces necessary to insert and to withdraw the connector/appliance outlet

This clause of IEC 60320-1 applies with the following addition:

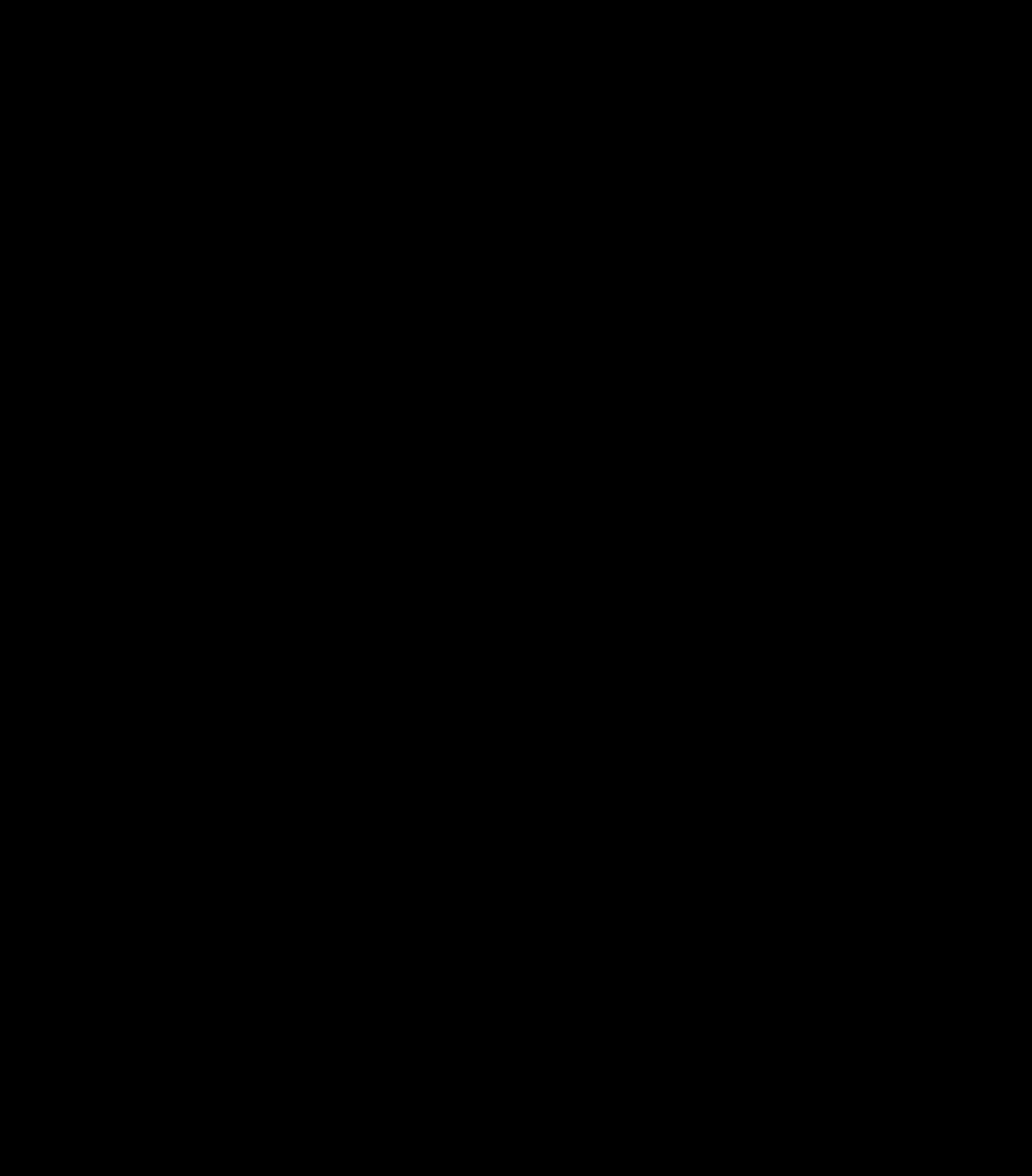
Additional subclause:



16 Forces necessary to insert and to withdraw the connector/appliance outlet

This clause of IEC 60320-1 applies with the following addition:

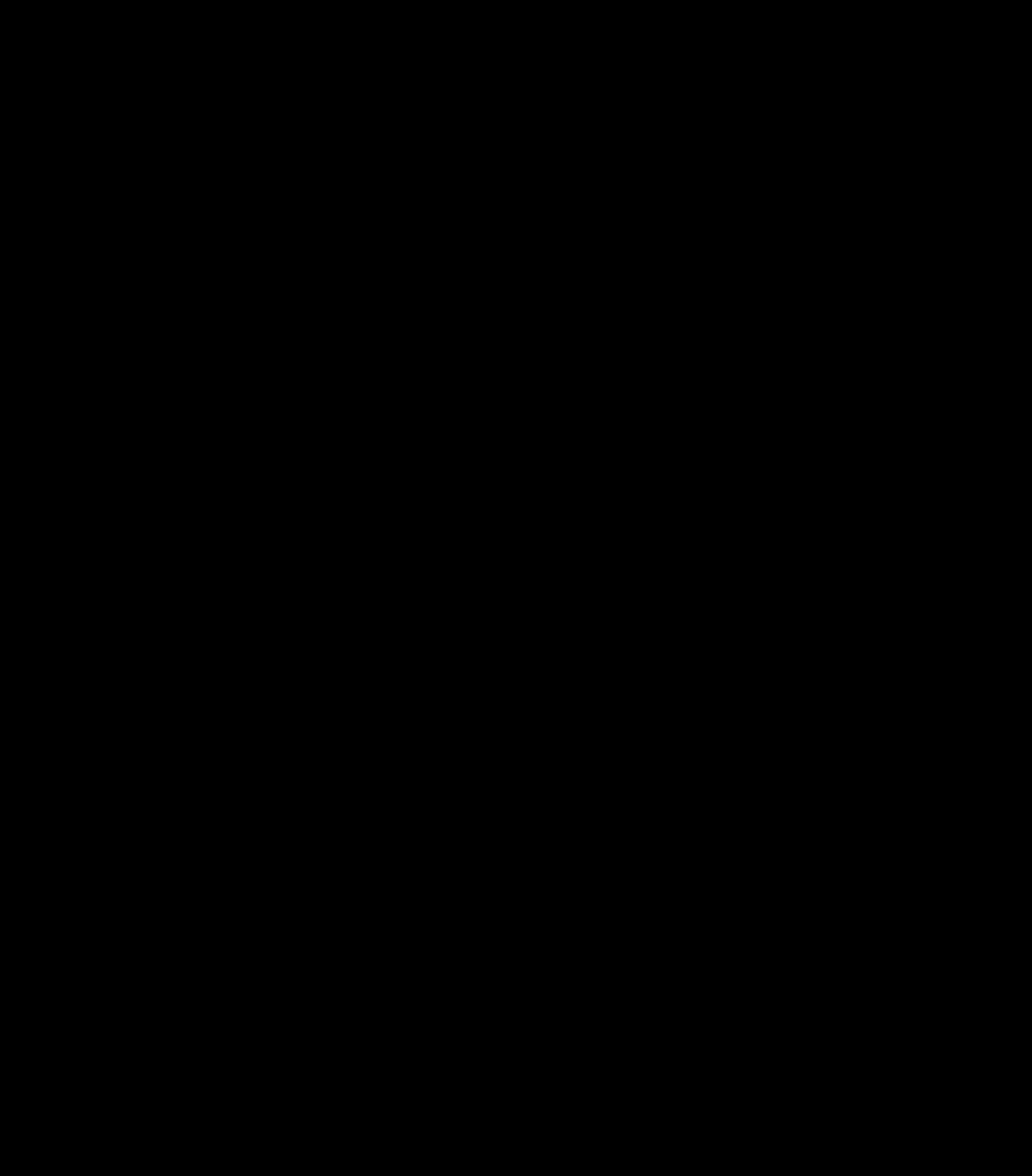
Additional subclause:



16 Forces necessary to insert and to withdraw the connector/appliance outlet

This clause of IEC 60320-1 applies with the following addition:

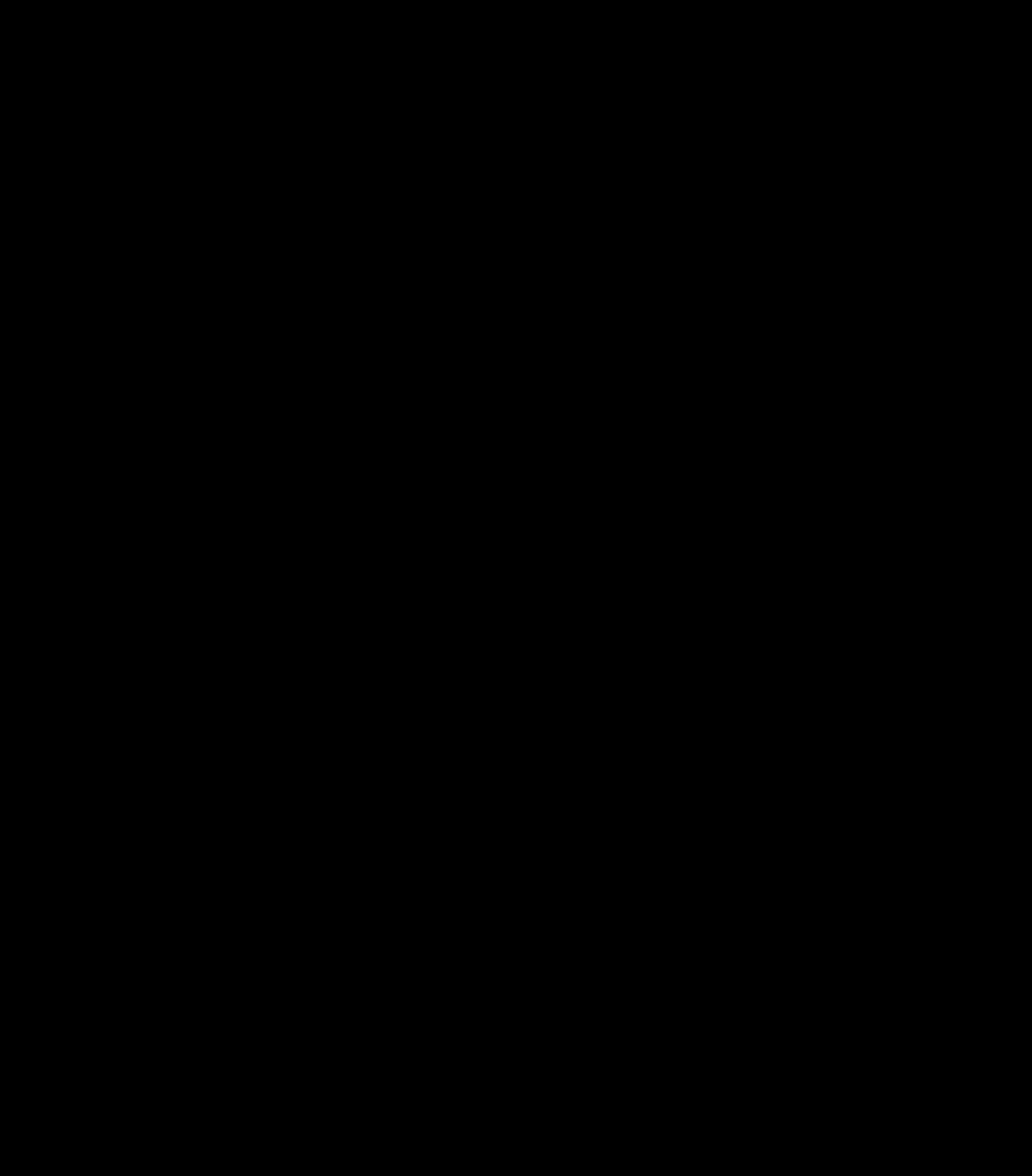
Additional subclause:



16 Forces necessary to insert and to withdraw the connector/appliance outlet

This clause of IEC 60320-1 applies with the following addition:

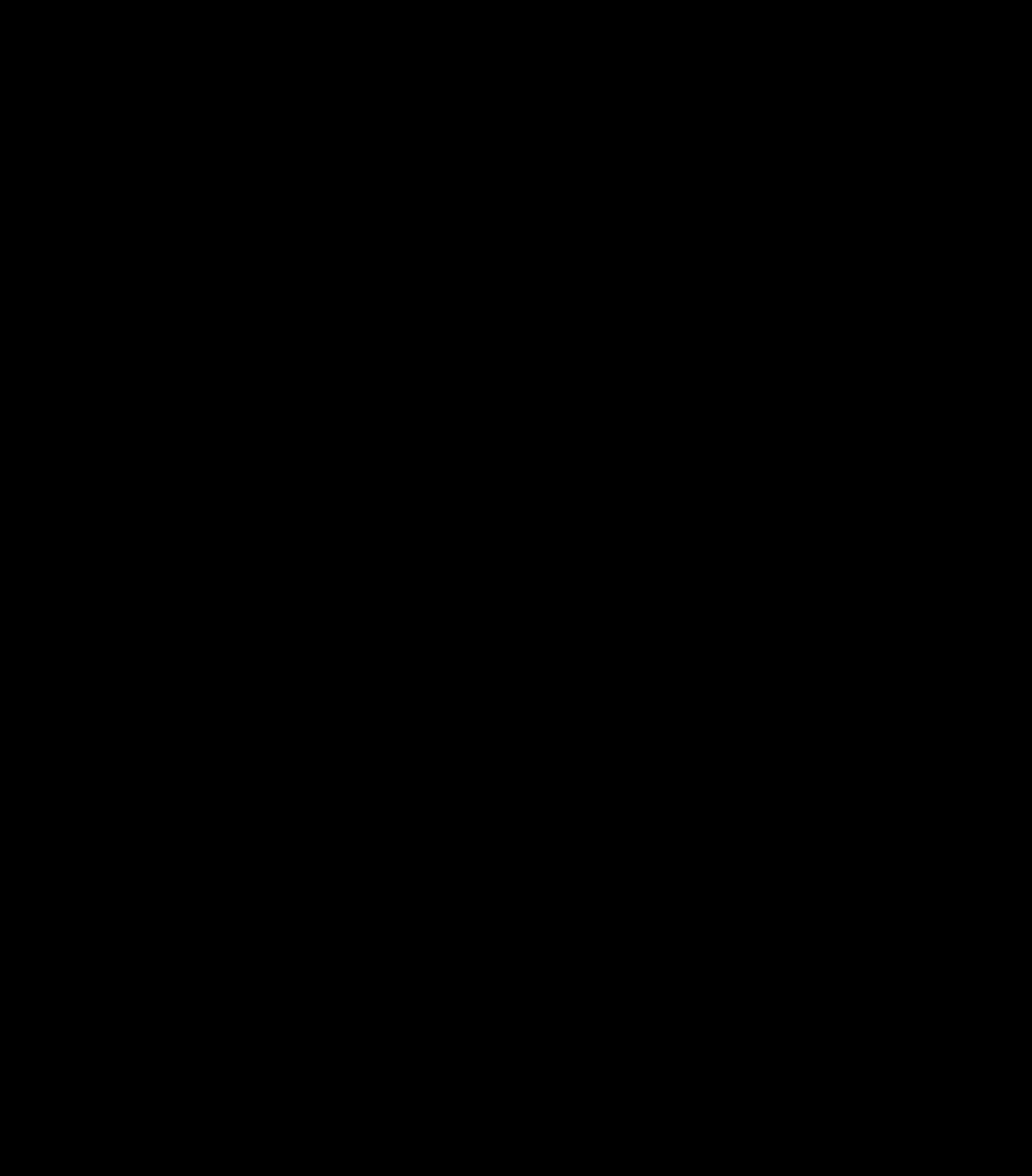
Additional subclause:



16 Forces necessary to insert and to withdraw the connector/appliance outlet

This clause of IEC 60320-1 applies with the following addition:

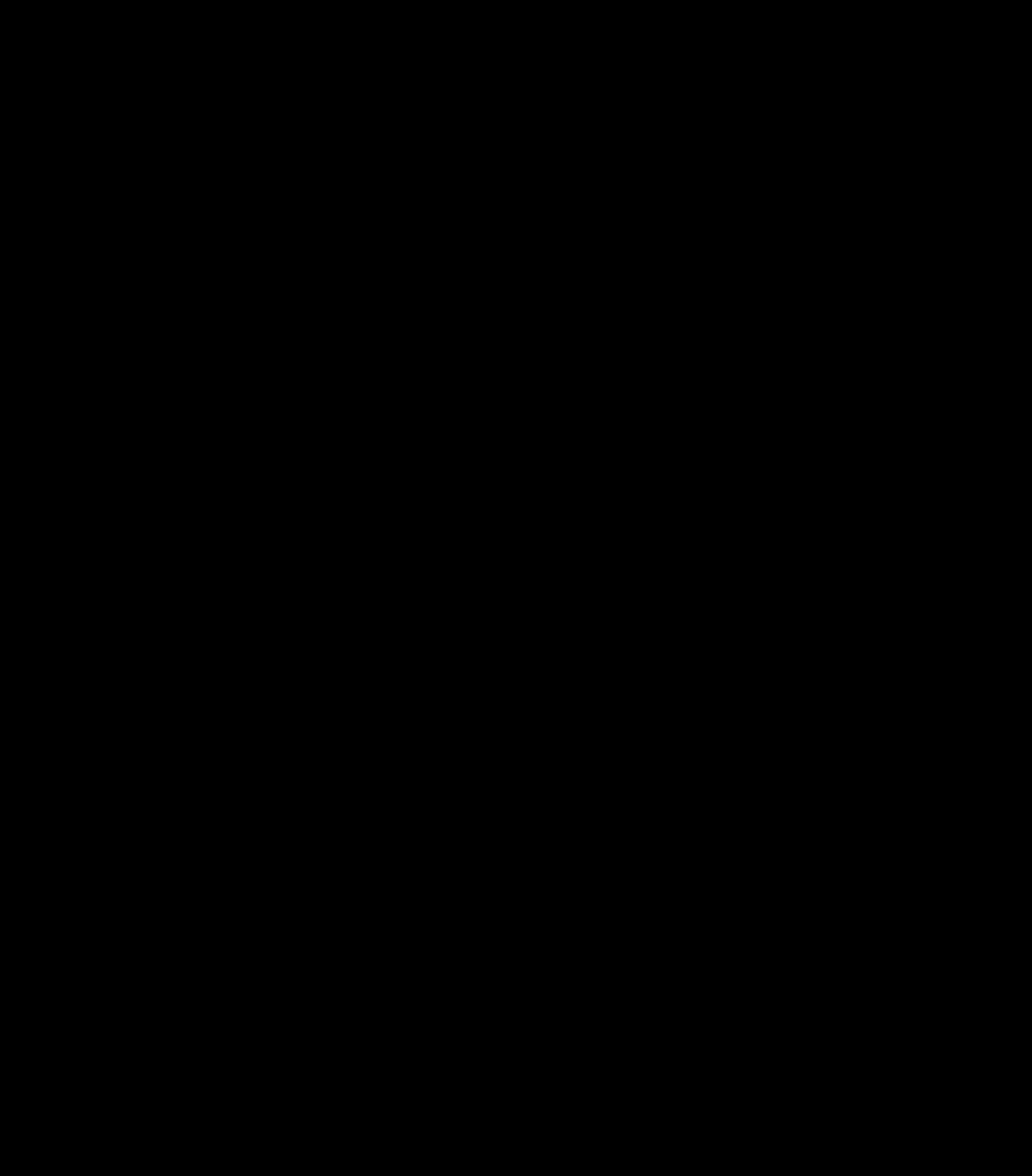
Additional subclause:



16 Forces necessary to insert and to withdraw the connector/appliance outlet

This clause of IEC 60320-1 applies with the following addition:

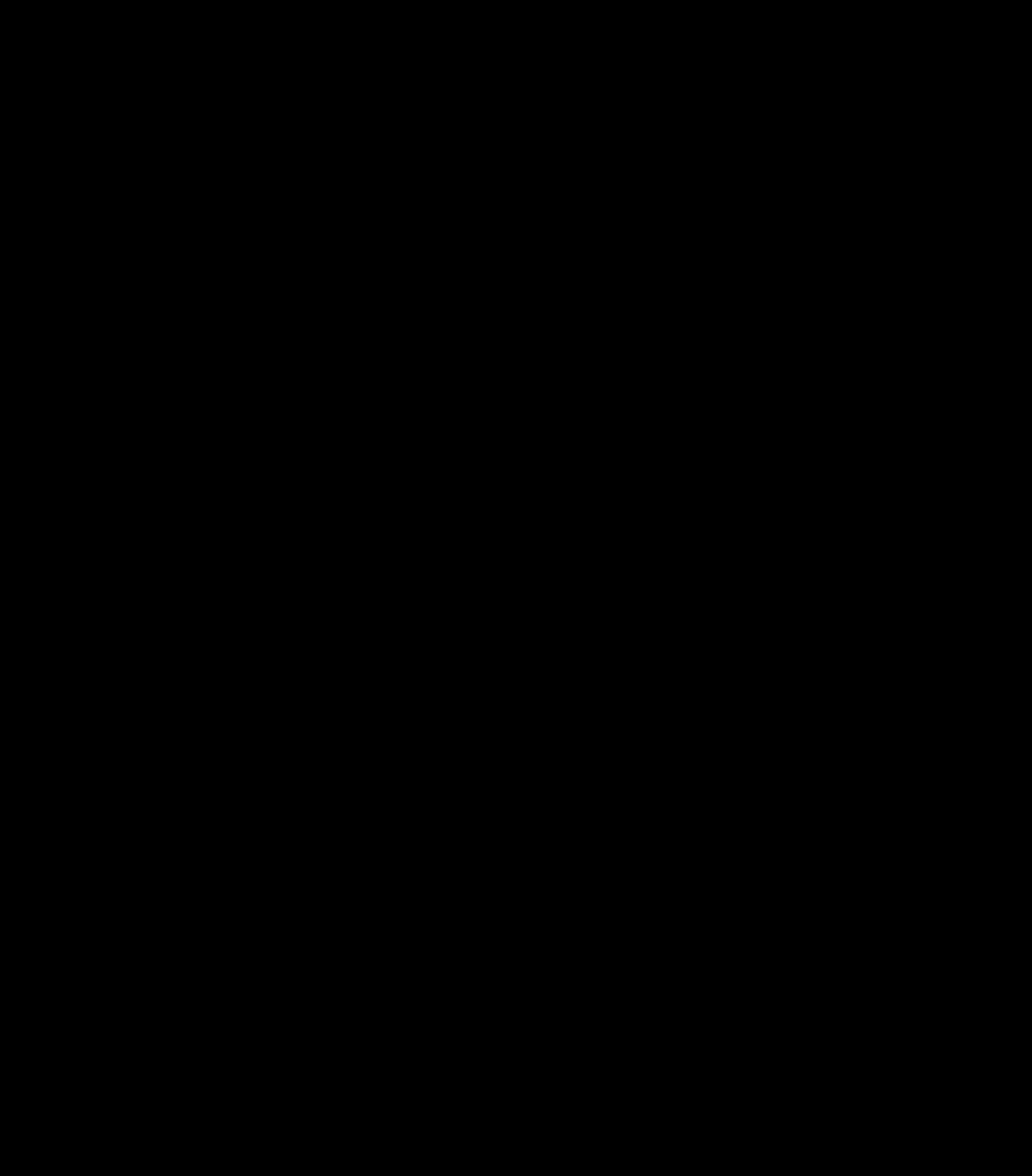
Additional subclause:



16 Forces necessary to insert and to withdraw the connector/appliance outlet

This clause of IEC 60320-1 applies with the following addition:

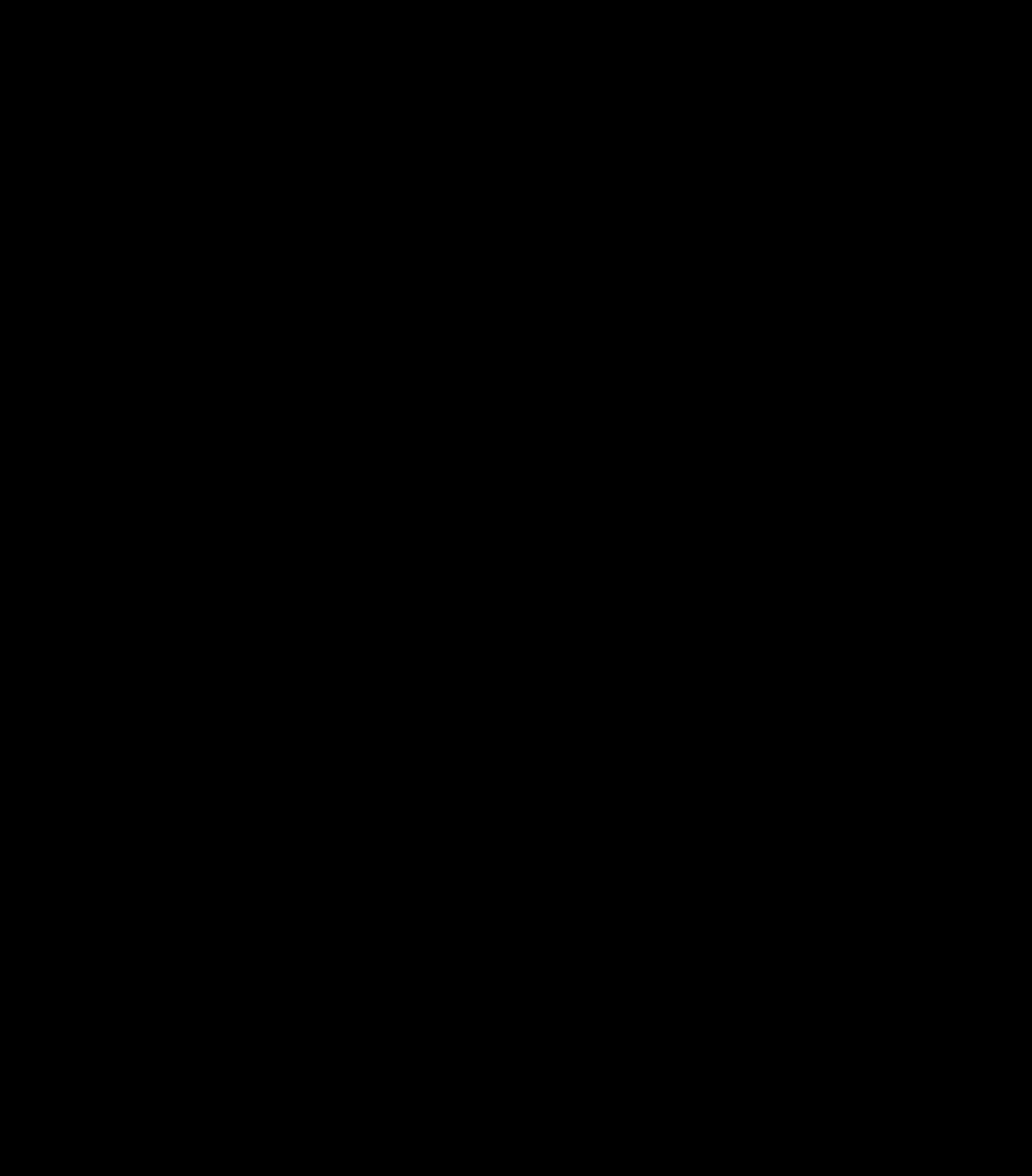
Additional subclause:



16 Forces necessary to insert and to withdraw the connector/appliance outlet

This clause of IEC 60320-1 applies with the following addition:

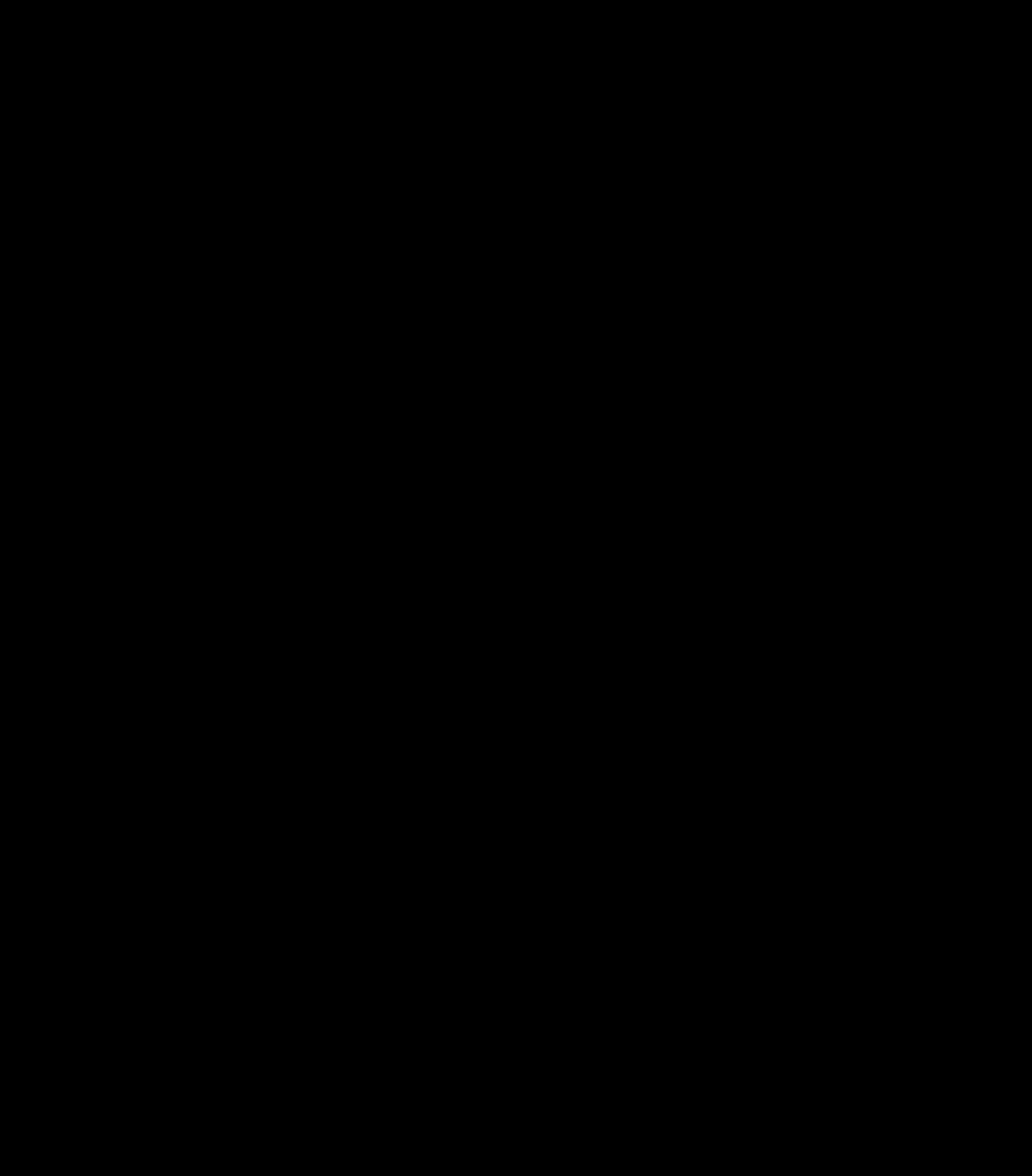
Additional subclause:



16 Forces necessary to insert and to withdraw the connector/appliance outlet

This clause of IEC 60320-1 applies with the following addition:

Additional subclause:



16 Forces necessary to insert and to withdraw the connector/appliance outlet

This clause of IEC 60320-1 applies with the following addition:

Additional subclause:

